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[OFFICIAL NOTICE.]

Third Annual Meeting, Pennsylvania Gas Association.

PENNSYLVANIA GAS ASSOCIATION,
OFFICE OF SECRETARY-TREASURER,
LEBANON, PA., March 2, 1911.

To the Members Pennsylvania Gas Association: The meeting of the Pennsylvania Gas Association will be held in Reading, Pa., April 12, 13 and 14, 1911. Headquarters will be the Mansion House. The following papers have been prepared:

"Qualifications for Successful Manager of a Public Service Corporation," by Mr. C. W. Butterworth, Milton, Pa.

"Installation of Gas Arcs and Consumption Results," by Mr. J. Vandenbout, Williamsport (Pa.) Gas Company.

"Distribution Shop Practice," by Mr. W. L. Chewning, Consumers Gas Company, Reading, Pa.

"Gas Kitchens," by Mr. H. H. Ganser, Norristown, Pa.

"Some Notes on Purification and Manufacture in General," by Mr. J. W. Murdock, Bethlehem (Pa.) Gas Company.

"Further Notes on Office Records and Forms," by Mr. J. Floyd McPherson, Easton (Pa.) Gas and Electric Company.

"Further Notes on an Automobile and Motor Cycle Experience," by Mr. L. R. Dutton, Philadelphia Suburban Gas and Electric Company, Wyncote, Pa.

"Soliciting Business in Small Cities," by Mr. L. M. Lincoln, Mauch Chunk, Pa.

"How Shall We Conduct a Canvass for New Business when the Gas and Electric Interests are Conducted by the Same Management," by Mr. W. C. Anderson, Manager, Wyoming Gas and Electric Company, Plymouth, Pa.

Arrangements have been made for a theater party, an informal dinner, and a visit to the wrought iron pipe works, of Reading.

Everybody interested in the gas industry is cordially invited to attend. Respectfully, W. H. MERRITT, Secretary.

[OFFICIAL NOTICE.]

Seventh Meeting, Southwestern Electrical and Gas Association.

SOUTHWESTERN ELECTRICAL AND GAS ASSOCIATION,
1316 COMMERCE ST., DALLAS, TEX., Jan. 29, 1911.

To the Members, Southwestern Electrical and Gas Association: At a called meeting of the Advisory and Executive Committees of the Soutwestern Electrical and Gas Association, it was decided to hold the Seventh Annual Convention of the Association in Houston, Tex., April 27, 28 and 29, 1911. D. G. FISHER, Secretary.

BRIEFLY TOLD.

REVISED LIST OF PAPERS, SOUTHERN GAS ASSOCIATION.—Late advices from Mr. James Ferrier, Secretary of the Southern Gas Association, show that the papers, to be read during the sessions in Montgomery, Ala., next week, are these:

"Commercial Lighting," by Mr. J. N. Cooke, Jacksonville, Fla.

"The Inspection of Consumers' Gas Appliances," by Mr. F. G. Dean, Atlanta, Ga.

"The All-Gas Kitchen," by Mr. G. M. Howsmon, Mobile, Ala.

"Advertising," by Mr. A. E. Kelley, Philadelphia, Pa.

"Water Heaters: Automatic, Instantaneous, Circulating," by Mr. W. J. McCortney, Kalamazoo, Mich.

"Applications of Gas Fired Boilers," by Mr. G. W. McKee, Rockford, Ills.

"High Pressure Gas Plant with Medium Pressure on Mains," by Mr. F. H. Sawyer, New Bern, N. C.

"Street Mains and Service Construction Policy," by Mr. K. L. Simons, Birmingham, Ala.

"Starting a Gas Company," by Mr. J. C. Storm, Amarillo, Tex.

"Relation of the New Business Departments to the Gas Company," by Mr. George Williams, New York.

"Shop Management," by Mr. A. W. Young, Knoxville, Tenn.

MARCH MEETING, PHILADELPHIA SECTION, NATIONAL COMMERCIAL GAS ASSOCIATION.—At 2:30 the afternoon of Saturday, March 25th, 130 members of the Philadelphia Section, National Commercial Gas Association, met at the House of the U. G. I. Athletic Club, Point Breeze Works, of the Philadelphia Gas Works. The visitors were conducted through the works by Messrs. Ramsburg, Assistant Engineer of Works, Lane, Superintendent of Works, and others, the apparatus used in the manufacture of coal and water gas, being described in detail. After the inspection, the party took dinner at the Windsor Hotel, 12th and Filbert streets, and adjourned later to the Walnut Street Theater, to witness the play entitled the "Country Boy." The regular meet of the Section was held Tuesday evening, March 28, at 8 o'clock, at the United Gas Improvement Company's Market street building. About 75 members were present. The meet-

ing was called to order by the President, Mr. C. G. Goeltz. The regular order of business having been dispensed with, Mr. Goeltz introduced Mr. Charles J. Ramsburg, Assistant Engineer of Works, Philadelphia Gas Works, the speaker of the evening, whose topic was "Gas Manufacture." Mr. Ramsburg first exhibited a map of Philadelphia, showing the location of the gas works, one at Point Breeze the other at Richmond. The Point Breeze works, which produces 53 per cent. of the gas used, supplies that part of the city south of Market street, while the Richmond works supplies the remainder of the city. When the gas works was taken over from the city by the United Gas Improvement Company, December, 1897, 18 millions cubic feet of gas were being used daily, and at the present time the output amounts to 45 millions feet daily. At 5 o'clock every afternoon, the 9 holders, located in different parts of the city, are filled to their total capacity, of 32 millions cubic feet, so that, in case of accident, there would be a supply which would at least last until the next morning. The manufacture of coal gas, which was the first process described, was gone into very much in detail, many stereopticon views being shown to elucidate the lecture. When the U. G. I. took over the works, stop-end retorts, which were at that time the newest type retorts, were installed. A bench of these consists of 9 retorts. At first pipes for conveying the gas were connected to each retort, but later one pipe took care of 3 retorts, these pipes being cleaned with a compressed air tool. The coal used in the manufacture of coal gas is obtained from West Virginia. From 1 ton of this coal 10,000 cubic feet of gas and 1,000 pounds of coke are obtained. Sketches showing condensers, scrubbers, purifiers, etc., were shown. The stop end retort is not an economical type, as the gases at the back end of the retort must travel over the heated coal, and are heated to too high a temperature. These retorts cannot be filled to the top as space must be left for the insertion of the tool for removing the charge. The retorts are charged every 4 hours. The through retort is a much better type than the stop-end, but recent tests have shown that the vertical retort will compete with anything now on the market. The manufacture of water gas was next described, this process being also explained in detail with the help of the lantern slides. The twin generator system is the best type, the set making gas for 3 minutes, and blowing for 2 minutes. The coke obtained from the coal gas machines is used in the generators. The gas passes from the generators to the carburetter, and then to the superheater, these being kept at a temperature in excess of 1,300° F. The scrubber is not used, the gas passing through the condenser and thence to the relief holder where the tar is extracted. The gas supplied the city of Philadelphia is a mixed coal and water gas, the coal gas being supplied as it gives a more pleasing flame to the open burner. The lease which the U. G. I signed requires the furnishing of 22-candle power gas at a distance of 1 mile from the works. The principle of the photometer used in measuring the candle power of the gas was explained, as was also the calorimeter for determining the number of B.T.U.'s in the gas. The discussion took the form of questions all through the lecture. A great many of the members participated in the discussion. Take it all, in all the elementalists were greatly pleased over the practical suggestions offered.

BOOKS TO HAND.—Amongst the recent welcome volumes to hand are: "Proceedings" New England Association of Gas Engineers; "Proceedings" National Commercial Gas Asssociation. The first named covers the transactions at the 39th and 40th meetings (1909-10), and in "get up" all through the book redounds greatly to the credit of its Editor, whom we presume is none other than the precise, methodical, successful Secretary, Mr. Gifford. He is to be congratulated on the excellence of the compiling, and to the printers (the New Bedford Printing Company) should be awarded the honorarium, "Well done, thou good and faithful servant!" A notable feature of the book is an excellent reproduction (frontispiece) of the features and pose of Mr. W. G. Africa, under whose judicious and impartial (nevertheless successful and satisfying) presidency both the reported meetings were conducted. Sedate, unruffled, painstaking, lovable Africa, long may he live to enjoy the fruits of well-directed efforts, for his ways are of those who persevere in peace.

"*Proceedings*," *Sixth Annual Meeting, National Commercial Gas Association.*—This excellent reproduction in book form of the accomplishings of the N. C. G. A.'s sixth meeting speaks well for the cleverness of Secretary Stotz, a well printed portrait of whom is carried on its pages. For a comparatively new man on this sort of work it is our pleasant task to say that no veteran could have done better—and it was no small task to edit the mass of matter that represents the work accomplished at the Commercial's sixth assembling. Beyond a doubt Mr. Stotz is the right man in the right place, whereupon the Association is to be congratulated on its fortunate choice of a successor to that human bee, Mr. Lucius Bigelow.

CURRENT MENTION—

MR. ROBERT K. RITCHIE, at one time President of the Bennington (Vt.) Gas Company, died at his home in Bennington, the morning of March 27th.

IMPORTANT betterments have been made on the plant of the Auburn (N. Y.) Gas Company, and the office quarters have been virtually rebuilt. This year it is planned to put down 5 miles of distributing mains and to erect a gasholder up to retaining 500,000 cubic feet.

WE likely should have told this before, but a week's oversight will not detract from the worth of the action. When Mr. Thomas N. Gorman, whose 20 years of service to the Peoria (Ills.) Gas Company contributed much to the wonderful success of that corporation, was nominated by the Democrats of Peoria as their candidate for Mayor, he resigned his position, so the "enemy" could not make capital out of his connection with "a monopoly." When his associates heard of his determination, they "got together" and presented him with an excellent timepiece, set in an elaborate gold case. The scene of the presentation was the Creve Cœur Club, and the recipient surely must have experienced to the full that thrill of satisfaction which comes to all who listen to words of praise, in the full knowledge that such has been fairly merited.

THE gas division employees of the Fulton County (N. Y.) Gas and Electric Company listened recently to a lecture on the selection, installing and maintenance of gas lamps, fixtures, etc., which was delivered by Mr. Carpenter, of the Welsbach Company. The lecturer was at his best, and his 30-odd auditors gave him a rousing measure of applause when his story was told.

MR. L. C. GRANT, City Treasurer of Burlington, Vt., admits that the loss incurred by the city during the past 5 years of its operation of a municipal electric lighting plant amounts to $92,793.70.

THE Nassau and Suffolk Lighting Company, of Freeport, L. I., has commenced work on placing its distributing mains in Mineola, and Mr. Campbell believes the system will be completed by June 1st. The Company has also opened its new office quarters in the Roosevelt settlement. President McDonald, who, by-the-way, is becoming more of a finished gas man every day, has good reason for congratulating himself on his perspicacity in taking hold of the old Hempstead concern, after the proposition had been turned down by some of the best metropolitan gas experts (the term is used advisedly) when Mr. Ramsdell's receivership was at end; and their decision was arrived at even following the expression of thought to them by Mr. Ramsdell, "That it seemed to him a really good purchase."

THE Buffalo (N. Y.) Gas Company has finally decided to accept the offer of $14,000 made by the Playgrounds Commission for the property on Sidway street, now used under leasehold as a public playground by the city childern. In addition the city agrees to remit the tax assessed against the plot on account of the paving of Katherine and Sidway streets.

THE Park Dam Power Company is to construct a gas works in Eldora, Ia. The C. I. Tenney combination is actively engaged in running down the contract. The estimated expenditure in this connection is $40,000.

MR. ROBERT HESS has resigned from the service of the Nebraska City (Neb.) Gas Company to assume the managership of the Citizens Gas Company, of Jackson, Tenn.

THE Laclede Gas Light Company, of St. Louis, Mo., will on the completion thereof, have appropriate office quarters in a modern structure, to be erected for it by the Hanover Investment Company, on the plot located at the corner of Eleventh and Olive streets. Judging from the tentative scheme it will be the handsomest office structure in St. Louis.

MESSRS. T. F. FULKERSON and M. M. Mecca, respectively, residents of Trenton, Mo., and Philadelphia, Pa., have, after quite a protracted negotiation, purchased from the Madill estate, of St. Louis, the controlling interest in the plants of the Moberly (Mo.) Gas and Electric Light Company. The system, both as to generating and distributing divisions, with be reconstructed.

Statistics evidencing the wonderful growth of the New York Edison Company, as compiled for the "better information" of the Public Service Commission for this district, were recently made public. The tables show the total revenue in 1910 amounted to $18,061,105, as against $16,508,257 in 1909. The net corporate income last year was $5,821,346, or well over a million more than in 1909. Dividends amounting to $2,897,100 were declared and paid, and the surplus was increased in the sum of $3,451,000, bringing the total thereof to $20,381,839. The average receipt per kilowatt was 6.266 cents, and the operating cost was 3.627 cents. Returns from the sale of electric current included $12,279,000 for metered use on commercial account, to $3,734,000 on public account; for metered power, $680,000; for street lighting, $310,000; for lighting in municipal buildings, $15,000; for current used in municipal buildings on account of heat and power, and $162,000 for miscellaneous use in public buildings. The Company's tax account amounted to sufficient to cause its charities' contributions to amount to an even $100.

THE Houston (Tex.) Gas Company recently issued to its customers, and the residents generally, a beautifully printed, nicely bound souvenir in the shape of a catalogue setting forth appropriate and helpful illustrations regarding gas ranges, water heaters, burners, lamps, shades, glassware, etc. The text is all to the simple understanding, and the Advertising Manager of the concern (Mr. Levy) is to be congratulated over his successful "try" at legitimate bookmaking.

MR. EARLE H. BUCK, Receiver for the Vincennes (Ind.) Light and Power Company, has filed with the proper court his report for last month. That his stewardship seems earnest and helpful would seem to be shown that the receipts exceeded the expenditures by virtually $5,100.

THE voters of Dexter, Ia., by a vote showing 80 per cent. in favor, assented to an issue of bonds the proceeds from the sale of which will be devoted to the construction of a carburetted water gas plant.

Text of the Decision, Massachusetts Board of Gas and Electric Light Commissioners, In re Master Plumbers' Association of Lowell vs. Lowell Gas Light Company.

The following is the text of the decision, the indexing thereof being contained in the title, as above:

Upon the complaint of the Master Plumbers' Association of Lowell, relative to the sale and installation of gas appliances by the Lowell Gas Light Company, and the hearing given by the Board to the petitioner, the State Association of Master Plumbers and the Company, with respect thereto, the Board, after giving the subject careful consideration, has reached the following conclusions:

The Lowell Gas Light Company was established by special law (Acts of 1849, chapter 234) "for the purpose of manufacturing and disposing of gas in the city of Lowell and its immediate vicinity," and is now engaged in that business. It appears that in connection therewith it has for a considerable period sold to its customers various types of gas appliances, including lamps, fixtures, stoves and hot water heaters, and has a store at the corner of Merrimac and John streets for this purpose. In this branch of its business it has been and still is the practice of the Company to install on the premises of its customers the appliances sold to them. At one time the cost to the Company of the labor and material necessary for such installation was charged in each instance to the customer, in addition to the price of the appliance; but at the present time, as a rule, the Company is selling such appliances at fixed prices, which include their installation on the customers' premises. In the sale of hot water heaters a water connection is necessary, and this work is required by law to be done by a licensed plumber. For this purpose the Company has for several years and is still employing a licensed journeyman plumber.

The avowed purpose of the Company in fixing its prices for the sale and installation of the appliances in question is to make itself whole, but not to make a profit. The Company finds its profit, if at all, indirectly in an increased sale of gas, due to the increase in the use of such appliances, and it states that, especially with respect to hot water heaters, there has been a great increase in their use since the adoption of a fixed price for the heater and its installation and the abandonment of the policy of selling the heater separately, the customer paying either the Company or some plumber the cost of installation.

It is claimed by the master plumbers, and there is obvious reason to believe, that, because of the practice of the Company hereinbefore described, they find that the sale and installation of gas appliances at such prices as are necessary to meet those fixed by the Company are unprofitable, and that in consequence they are virtually excluded from what might otherwise be a profitable branch of its business. It is further claimed that the Company's acts in selling and installing such appliances are *ultra vires* and unlawful, and it is upon this ground that complaint is made to this Board.

The Board has general supervision of this Company and the duty of keeping itself informed as to the Company's compliance with the provisions of law, and of giving notice to the Company and the Attorney-General of any violation or neglect to comply therewith. It assumes that this complaint is made to the Board because of this supervisory authority and duty, and that, if it is satisfied that the Company is violating or neglecting to comply with the provisions of law, the matter should be reported to the Attorney-General for his action.

The Board, however, is not satisfied that the acts of the Company hereinbefore described are beyond its corporate powers. There can be no doubt that under its charter the main purpose for which it was incorporated was to manufacture and sell gas in Lowell and vicinity. It can exercise only such other purpose as may be subordinate and incidental to this main design. If the Company had abandoned the manufacture and sale of gas, and were now devoting itself exclusively to the sale and installation of gas appliances, this would plainly be *ultra vires;* but such is not the fact. The sale of gas appliances is incidental merely to its main business of making and selling gas, in like manner as its sale of coke, tar and ammonia is incidental thereto. It is also important to the full accomplishment of this main business, for, by having the Company's customers install the greatest possible number of gas consuming appliances, especially such as are designed to utilize gas during the portions of the year when relatively little is required for illuminating purpose, the sale of gas may be and unquestionably has been greatly increased. The Supreme Court in this State has repeatedly given a liberal interpretation to what is reasonably incidental to the specific chartered powers of a corporation, and in Pennsylvania, in a case similar to the one under discussion, the court expressly held that the sale of gas consuming appliances and conveniences is within the corporate powers of a corporation organized to manufacture and supply illuminating and heating gas. (Malone *v.* Lancaster Gas Company, 182 Pa. St. 309.)

In reaching its conclusions the Board has confined its consideration to the question presented, as was requested. It has not entered into the expediency of the particular acts of this Company or their effect upon its revenues, its output of gas or its ability to give its customers adequate service at a reasonable rate. All of these matters may have a bearing upon the proper performance by the Company of its duty to the public, and their consideration may well be postponed until complaint is made, in the manner provided by law, of the prices or quality of the Company's service.

It would be a distinct menace to the public interest, and a serious embarrassment to proper supervision and regulation, if corporations engaged in the performance of a public service should extend their activities to other lines of private trade or business. So long as the companies keep within what is plainly subordinate and incidental to the performance of their public service, no public interest seems to be injuriously affected or endangered, and for that matter the practice of selling and installing gas and electric appliances may often be clearly of public advantage.

In this particular case the Board is satisfied that no public interest has suffered, and that the acts of the Lowell Company, which have deprived the master plumbers of a possible profit have, on the other hand, operated to the immediate advantage of the purchasers of gas appliances, and indirectly to the advantage of all gas consumers in Lowell. If, however, the Board is wrong in its opinion that the Company's acts are within its corporate powers, and if the private rights of the Master Plumbers or any of them are injured or put in hazard thereby, they have a clear remedy against the Company in the courts on their own initiative.

[Official Report.—As Furnished by the Secretary.—Continued from Page 646.]

PROCEEDINGS, FORTY-FIRST ANNUAL MEETING, NEW ENGLAND ASSOCIATION OF GAS ENGINEERS.

First Day—Morning Session.

THE NEW COAL GAS WORKS AT PROVIDENCE, R. I.—*Continued.*

Purifier House.—There are 4 boxes 40 feet by 20 feet by 10 feet deep, arranged to contain 3 layers of oxide with gate valve (Isbell-Porter) connections to produce a triplex flow of gas. The oxide is dumped out at the bottom and is raised to refill the boxes by means of a Craig-Ridgway, steam hydraulic, platform elevator. The purifiers have dry seals. The covers are raised by hydraulic power furnished by elevator pressure tank. Fig. 12 affords a view of the charging floor.

Meter House.—This house is designed for four 14-foot meters; 2 for water gas and 2 for coal gas, but at present only one 14-foot Hinman drum meter, built by the Tufts Company, has been installed. The spare room in the meter house is now used for a works' office and laboratory.

The laboratory (see Fig. 13) is equipped with a photometer room built on the American Gas Institute specifications, and U.G.I., 60-inch bar, a Junkers gas calorimeter, an Emerson bomb calorimeter and other apparatus necessary to make up a complete gas laboratory.

Power House.—The boiler room (shown in Fig. 14) contains three 440-horse power B. & W. boilers, equipped with dumping grates. A Sturtevant fan blower is used for forcing the draft. This blower is governed by a pressure regulator which is actuated by the boiler pressure. An open-feed water heater is used, but the temperature of the water leaving it is rather low, as there is very little surplus exhaust steam from the plant. A Worthington hot water meter for measuring the feed water is installed on each boiler. In the engine room (Fig. 15) are two 300 kilowatt, cross compound, direct connected Allis-Chalmers engines and generators equipped with barometric condensers; 220-volt direct current is used. The condenser water is drawn from a sump located near the slip on the north side. In addition to the ordinary switchboard equipment, there are 5 watt meters which measure the current for various circuits in the works.

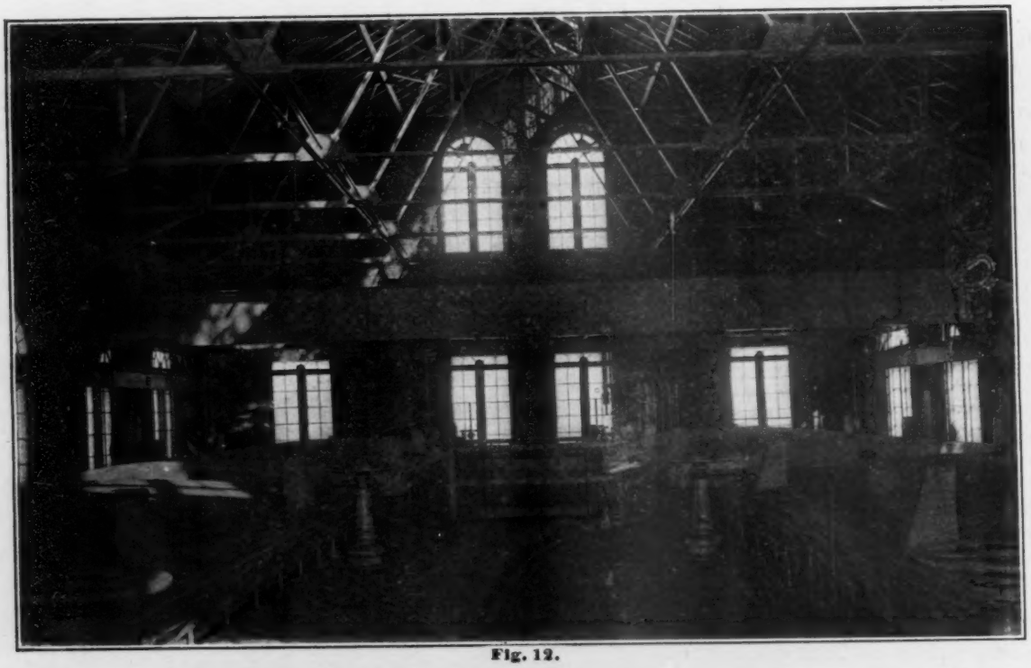


Fig. 12.

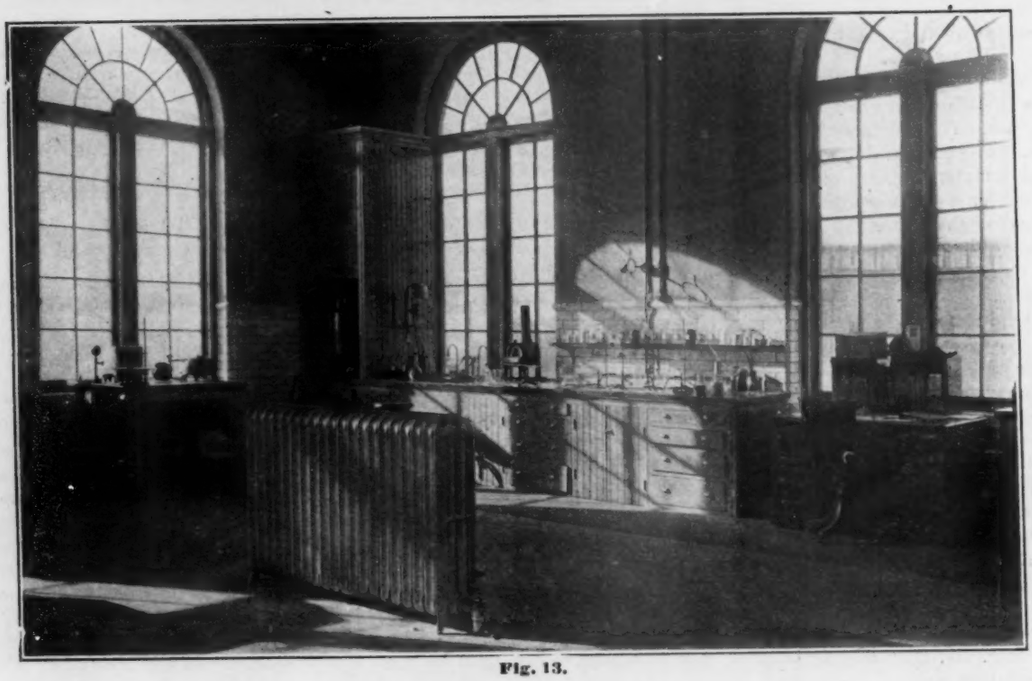


Fig. 13.

Fig. 16 is a view of the switchboard. In the cellar are the condenser pumps and a fire pump, which latter is connected so that a pressure of about 45 pounds obtained from the water tank in the works is constantly on the fire system. Ordinarily, salt water is used for fire purposes, and when the pump is started a check valve shuts off the tank pressure and the pump pressure of about 125 pounds then goes on the system.

All the machinery in the works is operated by electric power, except that in the condenser and purifier houses, which is steam operated. Where any dust is present, inclosed ventilated motors, furnished by the General Electric Company, are used.

Water Tower and Wells.—Four 6 inch wells are driven at a depth of 50 feet. These wells will supply 500 or 600 gallons of water per minute. The water is of very good quality, containing about two grains of solids per gallon and is consequently used for all purposes. Two Davidson electric power pumps (Fig. 17) are used for pumping the wells, delivering the water to a 100,000-gallon water tank, which is about 110 feet high.

Yard Connections.—The electric wires and steam pipes run from the power house underground, until the coke telpherage system is cleared, when they are taken overhead on poles to the condenser house. There are two steam pipes to the condenser house, one of which is to be used to supply the exhausters only in case the other line must be shut down for repairs. An 8-inch fire line extends the whole length of the works and two-stream hydrants are taken off of it at intervals. The whole yard is thoroughly sewered, the main sewers being 24 inches in diameter. A private telephone system connects the various parts of the works. Only electric light is used in the condenser, purifier and tar pump house, the wires and light being in vapor proof casings. The remainder of the plant is lighted with gas.

Tar and Ammonia Storage and Pump Houses.—There is a tar and ammonia well and pump house at both the condenser and the retort house. The ammonia is delivered to measuring tanks, from which the B. P. Clapp Ammonia Company, whose building is located near by, takes the liquor direct through a pipe line. The tar is stored in a ¼ million gallon steel tank.

On concluding the reading, Mr. Miller said:

These results were late in being printed, for I hoped to give a little more data, particularly in regard to candle power and calorific power, with a comparison of a flat flame burner with a Sugg; but we have been so busy with other things that I could not get round to it.

Discussion.

The President—You have heard two interesting papers on an interesting subject. The subject is now open for discussion.

The Secretary—Mr. President, may I say a word before the technical members begin to discuss this paper, in regard to the discussion itself? Probably you all know, so that it may be useless for me to say so, but it is a fact, that the discussions of the New England Association are the best of any other Association in existence. It is largely due to the fact that we are all such good fellows. Possibly it may be somewhat due to the fact that the discussions are not published until they are sent back to the speakers, so that each speaker may see what he has said and see if it sounds as he expected it to. I would like to call your attention to that, so that you may feel free to say what you have to say and not feel that it is going to appear in print without your having a chance to look it over. I hope you will proceed to give Mr. Miller a run for his money.

Mr. Barnum—How does Mr. Miller regulate the pressures through the producers and the oxide flue and around the retort, both top and bottom? Then I should like to ask him in regard to the action in producers, as they are quite deep and narrow, the take-off being quite low.

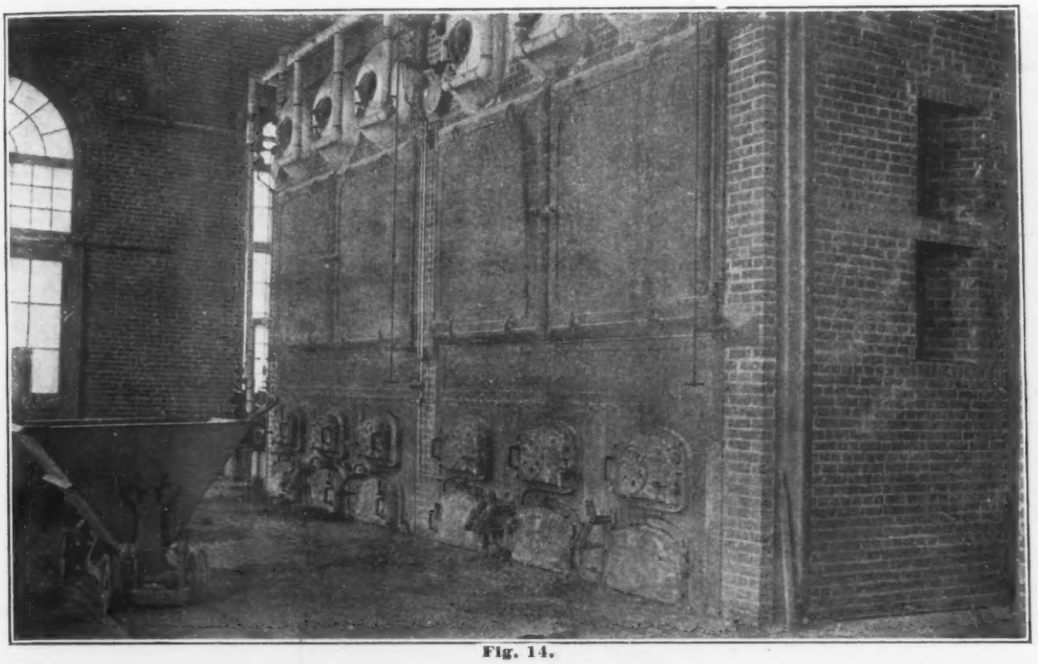


Fig. 14.

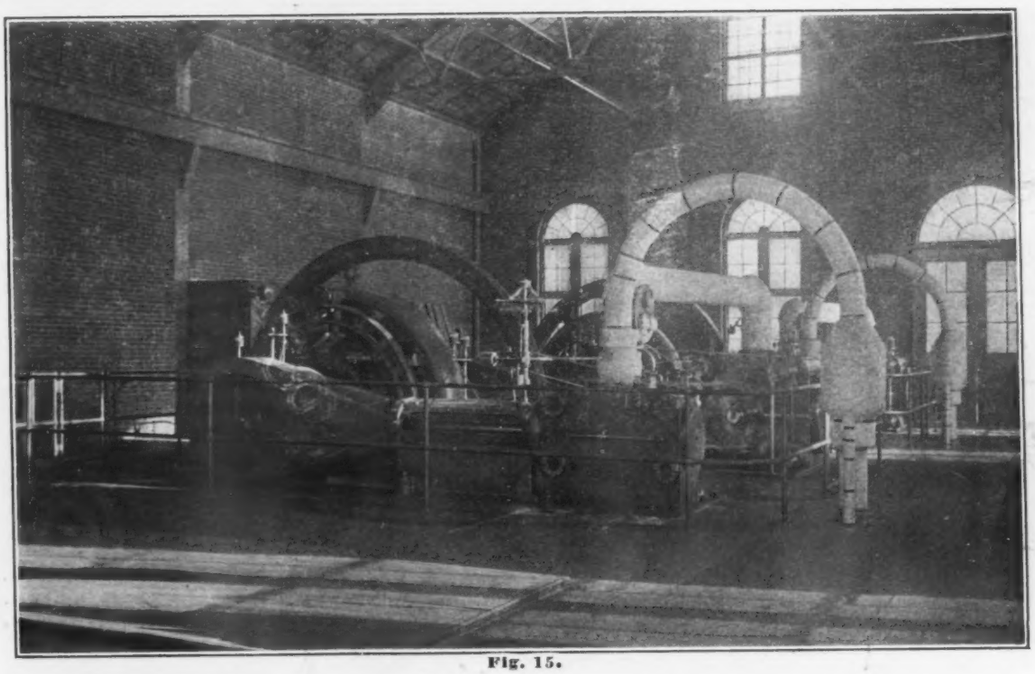


Fig. 15.

Mr. J. J. Humphreys—I should like Mr. Miller to tell us the pressures in the interior of the retort, near the bottom; in other words, as to the leakage through the retort due to the charge overhead.

The President—I believe there is one other installation of verticals in New England that has been running longer than the one at Providence. I would ask Mr. Africa if he can give us anything on the subject.

Mr. Africa—Mr. President, the Secretary requested me to give some information relative to the operation of vertical retorts in Manchester. We have been using vertical retorts for about 3 years, making more or less experiments with them. I will read a few statements here as to what we have accomplished. The result of tests made previously on the one bench of verticals at Manchester gave such promise that the two benches, consisting of 9 retorts each, were completely equipped and have been under fire since the first of June. There are some features in this setting that are interesting to note. The retorts are oval in section, 15 inches by 21 inches at the bottom, 10 inches by 14 inches at the top, and 18 feet 6 inches long. There are 3 retorts in a row and 3 rows to each bench, and the retorts of each row are connected together at the top, making practically one unit of 3 retorts, as they are charged and discharged at the same time. This arrangement has the advantage of doing away with many horizontal take-off pipes. The systems in use to-day having horizontal take-off pipes require the retorts to be filled to the top to prevent stoppages, and these horizontal pipes would be difficult to burn out if stoppages did occur. The arrangement above described, with its short single, almost vertical, take-off pipe for each row of retorts, allows the level of coal to be carried at any depth below the top desired, and we can, therefore, lower the level of coal to obtain a heated retort surface for fixing the gas after it leaves the coal. In this way we obtain higher candle powers than are usually obtained in either verticals or machine stoked horizontals. Another feature of our setting is the control of the heats. The benches are equipped with a CO_2 return system, which eliminates clinkers. They also have Venturi meters for measuring both primary and secondary air, and analyses of the waste gases show an average close to 19 per cent. CO_2 with no CO. No adjustments have been made to the benches in over 2 months, and the temperatures in the combustion chamber have remained practically constant in that time. The trouble experienced in our first trial of these settings, that of failure of coke to drop, has been eliminated. With the exception of the bottom pieces, and a few details around the hydraulic main, we have had no trouble in operating the bench. The bottom mouthpieces, which are the same as those tried on previous experiments, show considerable leakage, This leakage, of course, reduced the yield of gas per pound of coal. We have tried coal of all degrees of fineness, from screened lump to 75 per cent. slack, and they all behave well as far as discharge of coke is concerned. The following are the results of the first 5 days in August, when a good grade of Lincoln West Virginia coal was used:

Results from August 1 to 5, 1910.

Date.	Make.	Coal.	Yield.	C. P. Flat Flame.	Met. No. 2.	Coke. Used.	Per Cent. Coal Carbonized.
Aug. 1..	233 M	51,000	4.57	15.7	20.7	5,610	11.00
" 2 .	256 "	49,500	5.17	14.4	19.4	5,840	11.8
" 3.	252 "	48,960	5.15	14.21	19.2	5,810	11 85
" 4..	238 "	46,800	5.08	14.79	19.8	5,590	12 90
" 5..	242 "	49,000	4.94m	13.14	18.1	5,880	12.00
Totals..1,221		245,260	....	.....	....	28,730	.....
Avgs... 244		.....	4.97	14.45	19.5	.....	11.7

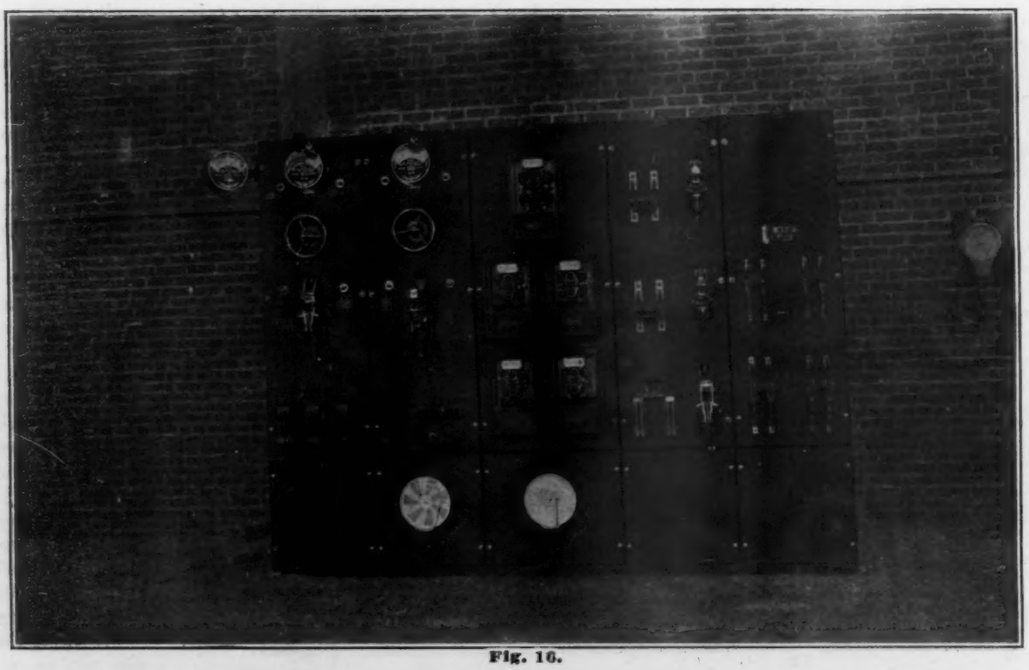


Fig. 16.

Fig. 17.

Summary 5 Days—9-Hour Charges.

Corrected Gas Made	Total	1,221 M.
	Average per day	244 "
	Per retort	13,555 cubic feet.
Coal	Total carbonized	245,260
	Average weight charge	1,022 pounds.
	Yield per pound coal	4.97 cubic feet.

Candle power 14.45 flat flame, or 19.5 Metropolitan No. 2 (pentane lamp st'd.)
Total coke used in furnace, 28,730 pounds.
Coke used in furnace, coal carbonized, 11.7.

The coke used in the furnace was weighed hot. No tests were made at the time for residuals nor heating value, but subsequent tests have shown gas of the same average candle power to have about 630 B. T. U. per cubic foot. The yields of tar and NH, promise to be high; as yet no accurate tests have been made. At the time of the above test no retort house governor was in use, and in consequence there was rather poor control of the vacuum on the hydraulic main. The two benches of 9's are operated by one man, who takes care of the fires and does the charging and discharging. This man is occupied only a small portion of the time and could easily operate several more benches. Since the above test was made the device for closing the bottom lids was changed and has been in use since February 4, 1911. The last 6 days—ending February 11—show the following results:

Summary for 6 Days—10 Hour Charges.

Corrected Gas Made	Total	1,324 M.
	Average per day	219 "
	Per retort	12,170 cubic feet.
Coal	Total carbonized	249,145 pounds.
	Average weight of coal	9.7 "
	Yield per pound of coal	528 cubic feet.
Candle power flat flame burner		14.81 cooled to 70°
" " Metropolitan No. 2 burner		19.90 "
Candle feet flat flame burner		78.20
" " Metropolitan No. 2 burner		105.07
Coke used in furnace per cent. of coal carbonized		13.9
B. T. U. on gas cooled to 70		630 to 635

The benches were allowed to cool so that the new closing device could be installed and at the time of the above test had not reached normal capacity.

Mr. Allen I should like to ask Mr. Miller if he has any trouble with stopped standpipes and heavy tar in the hydraulic main; also, what pressure he carries in the main?

The President Mr. Kennedy, have you anything to say on this subject?

Mr. Kennedy—Nothing in particular. It seems, from the fuel figures here, the different figures quoted, that rather a large amount seems to be credited for screenings, and I wanted to know how often cleanings were made, whether once per day or twice per day, or whether it was more extended, to account for that large difference in the screenings.

The President—Can Mr. W. F. Lawrence give us anything on the subject?

Mr. W. F. Lawrence—Mr. President, I am not at all familiar with the trials or actions of vertical retorts in this country, and I cannot give you any data except what I know from the English journals. Is that the question which you wished to ask me?

The President—Yes, sir. Perhaps you have some questions you would like to ask Mr. Miller?

Mr. Lawrence—I would like to ask what kind of coal was used at these trials. I don't think I quite understood that from the paper. Also, perhaps I might ask Mr. Africa what he considers to be the difference in candle power between the Metropolitan burner and the Sugg F, to give us a better line on the burner that we usually use for coal gas.

The President—Is there anybody else who has had anything to do with vertical retorts who can enlighten us on the subject? If there

is nothing further to be said we will give Mr. Miller and Mr. Africa a chance to answer the questions that have been asked of them.

Mr. Miller—As to Mr. Barnum's question as to the pressures in the setting, I think we at present are running at the outlet of the benches about $\frac{1}{8}$-inch draft, and there is a vacuum throughout the setting. I might explain that, ordinarily in the past, I have always run settings under a slight pressure, or as near zero as we could get, and have attempted to do so in one of these benches; but, after running for 24 hours, not only did the heat drop off, but in the upper part of the producer, which was full of coke, which was more or less wet, had penetrated entirely through the producer walls. If we had run that way much longer we probably would not have any walls left. The producer fire seems to be rather shallow and the grate area small; that is, shallower and smaller than in most of the producers I have heretofore seen. Possibly, after we get down to a working basis, as I stated in the paper, we will get much better fuel results. Regarding Mr. Humphrey's question, of course, the pressure in the bottom of the retort will vary in accordance with the length of time the c al has been in and its size. I think the last pressure we took was about 4 inches in the bottom of the retort, with an even gauge at the top; but I am going to ask Mr. Hintze to answer that question as well as at the same time, if he will, how often we are cleaning out the standpipes?

Mr. Hintze—Mr. Miller is right as to the pressure in the retorts. In regard to standpipes (horizontals in our case), they are cleaned practically once a week. With the 120 retorts in action it takes two men all the time to clear the pipes and to care for the hydraulic main. In the main, at the bottom of the dip pipes, there are what are called pitch pans, a pan that conforms to the shape of the bottom of the main, and it is a very simple matter just to draw the pan out and empty the pitch. That occurs about once a week in each section.

Mr. Miller—I think that answers Mr. Humphreys' question. Mr. Africa mentioned in his statement in regard to the trouble, I think, of burning off pipes. We do not have any trouble at all in that connection. Every time we scurf the retorts they are burnt out; that is, about every 20 days. Mr. Africa also mentioned candle power, by Metropolitan No. 2. We have made some tests on the Metropolitan No. 2 as well as various other argand burners, but I did not give a statement of them because I did not think they were conclusive, and we will go on with the tests later. I believe that we got candle power by the Metropolitan No. 2 as high as 19 or 20. Mr. Hamilton, our chemist, I think is here, and if he has the figures in mind I will ask him to state what the highest candle power was.

Mr. Hamilton The Metropolitan No. 2 ran between 19 and 20, as Mr. Miller just stated, and we found a difference anywhere from 5 to 6-candle power between that and the flat flame, according to our latest tests.

Mr. Miller—I would like to ask Mr. Africa what is the depth of his fire in the producers and the grate area. I think Mr. Hintze answered Mr. Allen's question in regard to stopped pipes and tar in the main. We have no trouble with thick tar. I have never seen any stopped pipes, except a few after the official test was finished. When the retorts are discharged we seal the dip pipes by raising the level of the liquor in the main, and as soon as the retorts are charged the seal is taken off again. We endeavor to run as close as we can to zero pressure in the hydraulic main. As to Mr. Kennedy's question, we do not credit for screenings ordinarily, but did so only for the test. I believe at the time the fires were cleaned every 36 hours. Is that so, Mr. Hintze?

Mr. Hintze—They were, I think.

Mr. Miller—We are now on 48-hour cleanings, and secondary bars are put in about 2 feet above the grate; consequently everything that is below those bars comes out in the form of screenings and ash. I will explain with reference to Mr. Lawrence's question that we are using Westmoreland coal, but our contract with the Didier-March Company called for coal with 6 per cent. of ash, and this coal at the time I believe was running about 9 per cent., so we had to correct back to coal containing 6 per cent. of ash.

Mr. Kennedy—If I may be permitted to ask just one further question, I would like to know how frequently, between the 48-hour cleanings, the furnace grate is being pricked? Evidently something is being done during the interval which is not strictly cleaning. How often does that take place?

Mr. Miller—Every 3 hours the door is opened and the fires are raked up between the grate bars with a long hook.

Mr. Africa—As to the difference between a Metropolitan No. 2 and the Sugg F burner, I don't recollect what it is exactly. All our records are made from the flat flame burner. There is about 5 to 6 candles difference between the flat flame burner and the Metropolitan No. 2. Between the F and the Metropolitan it is about 3-candle power. I don't want to give that as an official figure. I am going to ask Mr. O'Donnell to give you the size of the furnace, the depth of fire and how often the fire is cleaned.

Mr. O'Donnell—The furnaces have 22½ square feet grate area, the height of fuel bed is carried from 5½ to 6 feet, and the fires are simply touched up by passing a rake beneath the grate bars to remove the fine ash, every 24 hours.

Mr. Kennedy—I am interested to know what general troubles might have arisen in starting a new plant of that size. We had ours, and only on a small plant, and for that reason I am searching for information, because it might be useful to me at another time. Troubles must have developed; and, if it is not too pertinent a question, it seems to me a sort of reminiscence might help a good deal some of us greenhorns.

Mr. Miller—Well, lots of trouble happened, I think; but nothing at all serious. I do not remember anything particular. Mr. Hintze does, I am sure; he was up several nights fixing them. [Laughter.] There was some trouble with motors, conveyors, etc., and then we had some trouble with getting barometric condensers working properly; but I think everything is running very smoothly now. I think when you see the works to-morrow that you will find everything whitewashed nicely and clean, and we hope to keep things so until you leave.

The President—Gentlemen, is there anything further to be said on this question, or any further questions to be asked? If not, we are ready to move on to the next paper.

On motion of Mr. Barnum (seconded by Mr. C. A. Learned) a vote of thanks was passed to the Providence people for their full and frank statement as to the Providence situation, and for the kind invitation to visit their plant.

On motion of Mr. Anderson, a vote of thanks was passed to Mr. Africa for his kindness in presenting the figures read in the discussion just closed.

(To be Continued.)

[Concluded from page 661.]

THIRD ANNUAL MEETING, INDIANA GAS ASSOCIATION.

Held in Fort Wayne, Ind., January 18th and 19th, 1911.

Second Day—Morning Session.

The President—It is very much indeed to be regretted that our old friend, "Sam." Murdock, is not able to be with us. I understand he is at Hot Springs suffering rather severely from rheumatism. He, however, kindly prepared a paper for this session, and in his absence I will ask Mr. Mulholland to read it. Its title is

THE RELATIONS OF A PUBLIC UTILITIES COMPANY TO THE PUBLIC.

The subject assigned to me for this meeting, "The Relations of a Public Utilities Company to the Public," is one that has been thoroughly studied, discussed and presented by many of the most able operators and managers of public utilities and students of public service questions. It, therefore, is not my hope to present anything new or strange on this subject. If I can only freshen your memories to some wise suggestion heretofore given, or render a little more forceful or active some right principle already planted in your minds, my work to-day is well done.

While all public utilities must of necessity be operated along the same lines, still to-day I am the gas man, and from the gas man's standpoint will endeavor to treat my subject. The State and city, representing the whole people in granting a gas company its charter and franchise, give corporate life, commercial privileges, not for the company's profit alone, but more especially for the public's benefit, and in accepting the privileges of its franchise the gas company also assumes the responsibilities and obligations. All corporations, whether State, municipal or private, are but a collection of individuals organized to accomplish objects that would be impossible to the individual acting alone. The maintaining of friendly relations with the community, the obtaining of the best results for consumer and company; in fact, the successful operation of a gas company depends on the treatment accorded the consumer individually and not collectively.

This treatment must be based absolutely on the square deal, and the gas company must do not only what has to be done, but what ought to be done. The service furnished must be adequate for the needs of the community served; adequate not only in quality but also in quantity, and each consumer, regardless of the amount of business, who favors you with his patronage, is entitled to the same service for the amount of his needs, and to the same courteous attention in all his relations with the company. The consumer is entitled, not as a matter of courtesy or expediency, but as a matter of absolute right, to the best possible service at reasonable rates. The company, on the other hand, is entitled to a fair return on the capital invested in the construction of its plant and the development of its business. The rules and regulations under which gas is distributed must be reasonable and enforced with absolute impartiality. "Public opinion is a fickle jade," and the playing of favorites is soon found out and resented; but in the majority of cases the individual favored soon forgets the favor and always has the opinion that you are not square. He has a lurking suspicion that if you made an exception in his case you are doing more for someone else, and that he is not getting all that is coming to him. The American public, while very human, is inherently just and fair, and if given the time and facts will ultimately land on its feet, and the gas company must never for an instant forget that friendly relations with the public to which it caters are essential to success. To secure and maintain this relation, some individual representing the gas company (who is in fact the gas company to the consumer) must, of course, meet and deal with the public individually, not collectively. The consumers come not in crowds, but singly, and transact business individually, each having his own trouble, complaint or inquiry; be decently sympathetic and square, give all possible information, and treat each so that a friend, not an enemy, leaves the gas office. The clogged burner, the trapped pipe, the frozen service or any other of the many local troubles, must be promptly, cheerfully and efficiently remedied. These individual troubles may appear of small interest to the public, but never forget that (to the woman) the clogged burner, the trapped or frozen service or other cause that prevents dinner from being ready so the children can get to school on time, or prevents husband or father or son from reporting promptly at his place of employment, is to her of far more importance than affairs of State or political questions of nation-wide interest. It is not only good business and a plain duty, but also a pleasure, to an efficient and competent gas man, to get his customers' troubles *behind him*, and the more efficient and competent he is, the more he realizes the truth of the saying, "A satisfied customer is a mighty good business asset."

The gas company's duty under its franchise is to furnish service adequate, both as to quality and quantity. This does not mean supplying the fat territory in the center of the city alone, but also means to extend the mains to the more remote districts where the returns are not as great, but still sufficient to pay for the cost of production and to yield a fair interest on the cost of the extension. The franchise granted by the very people who buy the gas that keeps the company alive contemplated efficient service, and the spirit of that contract, regardless of its written letter, demands that the gas company at all times furnish such gas in such quantities and of such a quality that it will satisfactorily perform the service for which it was intended, and where standards are set out in franchises, the service must at all times be at least equal to these requirements. This is not because it sounds good, but is said because, even from the standpoint of selfishness, you cannot afford to trifle with the contract that gives you commercial existence, or misrepresent to the people who support you and give you business life.

In the operating of a gas company, the fact must be borne in mind that, no matter what the time limit may be in the franchise, in some form or another the gas company is going to live until such time as the necessity, convenience and economy of the use of gas by the public cease to exist. Therefore, paying of a few dividends, the securing of temporary franchise rights legally enforcible, does not of necessity mean a successful management. The conducting of the business in such a manner as to win the confidence of the public and its approval of the earnings of these dividends, and the possession of these franchise rights, and a faith in the honesty, truthfulness and integrity of the company, mean success indeed.

A careful study of the successfully managed gas company will disclose the fact that the management is considerate of the rights, comfort and desires of the public it serves, and knows that it cannot take too good care of its customers; it realizes that no one has more interest in or a better right to know how a company is complying with its duties under its franchise than the public who granted that franchise, who buy the gas, and who are dependent on the quality and quantity of gas furnished for the comfort that has become a necessity in the modern home. "The public be dammed" is an obsolete term. The modern public thinks for itself, acts for itself and protects itself. It cannot be bluffed nor can it be long misled, either by the company or by those "having an axe to grind," who attempt to make use of the old-time prejudice to achieve a selfish purpose or to accomplish a personal ambition. Honest publicity never yet hurt an honestly conducted enterprise. A straightforward statement of facts, giving not half but the whole story, will always win friends. If a company is really doing all it can to give adequate and satisfactory service at reasonable rates, it has nothing to apologize for, and can successfully defend itself against any raid that may be made on it. We are not commercial highwaymen nor dictators, we are not operating a monopoly, we are just as dependent on our customers as any other merchant in the community; we may be a little larger than some, we may have more customers, may reach more homes, may have more people dependent on us for comfort, may have more opportunities to make mistakes, but the public should realize that under our franchise we have to sell to all that apply, we have no right to separate the sheep from the goats, that we are only human and have our limitations, and it is but fair to ask them to give us credit for being selfish enough to do the best we can, in order to hold their patronage and secure their friendly goodwill and hearty co-operation.

A word as to ourselves. We all, from manager to janitor, must realize that to the public we are the gas company. The corporation itself is an intangible, invisible thing; we are tangible, we are real. Their individual relations and dealings are with some one of us individually. As we treat them the company treats them; as we impress them the company impresses them; we may pass out, but the company goes on forever. After we are gone the impression we made still remains. Therefore, we have a responsibility we cannot shirk. If we are honest and square we will realize we are only there as a trustee, representing the stockholder who is not present to protect himself and give the public the square deal. If we can't get this viewpoint the sooner we get out the cleverer we are, and the sooner we get into something else where there is a possibility for success, since our current function holds nothing but failure.

The manager, by whom I mean the final voice in the company's operation, who is most successful, is the one who has no one working *for* him, buth has all his associates working *with* him. To get the best he must be just in his relations with his associates and with the public; his word must be always above par, a promise made must be fulfilled, a pledge given must be redeemed, his word must be his company's word, one as sacred to him as the other, and the public and his associates must be made to understand and realize that he is big and broad enough to assume the responsibility of his position and will insist on maintaining the integrity of the word of both. The representative of the company with whom the public comes in contact is of his selection, be that representative trouble man, salesman, cashier or street man, and he is responsible for the statements and promises made by that representative. If he has not made a wise selection the fault is his, not the consumer's, and it is up to him to make a change; but the promises made are his and are the company's, and must be lived up to, as the consumer has a perfect right to believe that he has done his share, has seen the gas company and made his bargain, wherefore it is up to the gas company to do its part as promised. The above does not apply to what may be called a one-man company, in which the manager is familiar with all departments of the plant, or where he personally knows and can adjust troubles with each customer, but applies with even more force to the company that has grown to a size, requiring heads of departments, division superintendents or local managers. His task then may be harder, but it is still just the same. The selection of the various responsible heads is his, and he must, to get the best results and place responsibility, give each authority to manage and control his own department, and then hold him responsible for the outcome. What has been said of the manager applies with equal force to every employee of the gas company, each within his own sphere. No matter how humble a position he may fill, if the work is well done it will ultimately find him out, for never before in the history of the business world has competency been so eagerly sought for or so quickly recognized. This is particularly true of the gas business, for no other line has a better future or has greater possibilities. Now, as to the new business or sales end of the company:

Ours is an honorable calling, and to be a successful new business

man you must have absolute faith in and respect for your own calling. What line of goods brings as much comfort to as many homes? The gas fire means a half hour's additional sleep each morning to the wage-earner's wife. It saves at least the equivalent of another half hour in the filling of the wood or coal box, the cleaning of ashes and the many other annoyances connected with a hard fuel fire, and this at a less cost. Have you ever stopped to consider that the cost of a cigar or a glass of beer each day practically pays the average gas bill?

As to gas for illuminating, it is well filling its own place and successfully meets all competition, not only as to quantity and quality of the light but also in price. One of the queer things a great merchant told his selling force of some 400 shrewd, alert, ambitious salesmen, who had been called to the home office for the annual meeting, was, in making a sale, the salesman should never give a thought to his own profit in the transaction, and should think only of the great profit which will come to the purchaser of the goods he has to offer. In other words, in trying to sell to other people, a salesman should always successfully sell himself. The salesman, to be effective, must be sincere, must have a real and enthusiastic belief in the merits of the goods he is offering for sale. He must realize that, in offering people an opportunity to buy worthy goods under fair conditions, he is engaged in an honorable calling, and is really doing them a favor by intelligently calling their attention to the merits of his product. To sum up the whole question, the gas business is like any other mercantile enterprise, and can only achieve permanent success by following out the long, straight road laid down by correct commercial morals.

Discussion.

The President—When the Executive Committee called on Mr. Murdock to prepare a paper on the subject, we felt that Mr. Murdock was the one man in the Association who could do justice to it. From what Mr. Mulholland has just read I think we are all agreed that our judgment was correct. I am going to ask for discussion on this paper, and I will call on Mr. Dunbar.

Mr. Dunbar—I have listened with a great deal of interest to the words of wisdom contained in the paper read by Mr. Mulholland, and, like yourself, I believe the Executive Committee made no mistake in the selection of Mr. Murdock as one pre-eminently qualified to write a paper on this subject in accordance with those laws best adapted to bring the company and the consumer into closer, more intimate, and confidential relations. I know Mr. Murdock is peculiarly adapted and qualified, by reason of his mental make-up, to deal diplomatically, and in the most persuasive manner, in order to bring his customers and patrons into that condition of mutual relation which insures confidence. The subject of endeavoring to cause our patrons to have confidence in us is the one most vital to the success of our enterprise and our business. We are differently situated to almost any other public utility corporation in existence. We have many customers from whom our returns, as indicated by the paper, are very small. The price of a cigar or a glass of beer in the year is apparently so small as to cause one to stop and ponder and wonder how it is possible for a corporation to furnish its products and to get such a small annual return for each installation, and it is only because we have an almost innumerable number of customers, compared to our annual sales, that we are able to live and to make an interest on our investment; and because of the large number of patrons we have, and because of the makeup of human nature, which we all know in ourselves from our own experience, when we all know how easy it is and how much relief it affords a fellow to kick, actuated by the American independence, or the American spirit that caused the Revolution of 1776, that we will not be imposed upon and we will not let the other fellow get the best of us—when we remember all this, it is not surprising that, with the number of our customers, it is almost impossible for the gas company to have goodwill for the entirety of their existence, so we have to be particularly careful in our dealings with the public. We have to be diplomatic. We have to attend to each personal complaint in order that our demeanor and our treatment of the customer may to the very fullest extent pacify him, if possible, and, as I read, in one of the Association discussions, we have to realize that when a customer makes an objection to his bill, or kicks, that, whether his grievance is real or imaginary, yet to him it is as real as if the injustice actually existed, and it is up to us, as managers of the company, to treat that imaginary grievance as if it were real. Study human nature, find out the point from which it may be easy to convince and go at him from that point. I often find, in dealing with a consumer, that it is best to let him have his entire say; find out his grievance, find out how much is real and how much is imaginary; study his disposition, then it is up to the man to possess the qualifications to deal with him in accordance with his disposition. But in general, we must realize—and I am glad that at this meeting there has been so much said on the subject of our dealing with the public—that there has been so much said that will cause us to realize that almost our life, our successful existence, depends upon our being able to appease and to please the public and our customers. I think one way to do this is to always be able to always express your appreciation to every customer with whom you come in contact of our realization of the value that his business is to us. Let him believe that you are his servant, that you are in the business to serve him, and that if you can serve him to his satisfaction and gratification that that is a part of your own compensation. It makes him feel good to know that he is of some use or benefit in the community in which he lives and among his associates, and if we make our customers feel they are doing us service by patronizing us, and if we can make them feel that we appreciate their business, that we stand ready and willing, and are anxious at all times and all occasions, to serve him to the full extent of our ability, it causes in him a reciprocal feeling of appreciation that is worth very much to us, and I would never, if I could prevent it, let a customer go away dissatisfied without using every endeavor possible to make him see that his own grievance may be unreal and cause him to see that it is from our own standpoint. It is our business to put ourselves in his place and view it from his standpoint, with a view to reconciling his position with that of our own. I was impressed with that part of the paper in which Mr. Murdock says that every man in the employ of the company, from the janitor up, is one of its sevants; it ought to be his duty, his desire and his endeavor, to treat every customer in a gentlemanly manner, and to give the customer no cause, if possible, to have any grievance against the company in whose employ he is. We cannot too deeply study our relation with the public, and to observe those acts of deportment best designed to conciliate the public and make them our friends. [Applause.]

The President—We have a few minutes that we can devote to further discussion of this excellent paper. Would anyone else like to say a few words? If not, with your permission, I will instruct the Secretary to wire to Mr. Murdock our thanks and appreciation and greetings from the Indiana Gas Association, with best wishes. We have still one paper, but I deem it advisable to get through with the business of the meeting first, so that whatever time we have over we can devote to Mr. Battin's paper. I would like to ask Mr. Mulholland what the programme is for this afternoon relative to the time of leaving.

Mr. Mulholland here outlined the nature and plan of the remainder of the entertainment arranged, after which the Secretary read the following

TELEGRAM TO MR. MURDOCK,

which he was about to forward as per the previous instruction advised by the Association:

"To Mr. Samuel T. Murdock, Hot Springs, Ark.: Indiana Gas Association sends sincerest greetings, and regretting your illness and hoping for your speedy recovery, extends its heartiest thanks and appreciation for your excellent paper just enjoyed by our Association." [Applause.]

The President called for the

REPORT OF NOMINATING COMMITTEE,

which was read by the Chairman, Mr. Fred. W. Freese, as follows:

To the President and Members of the Indiana Gas Association—Gentlemen: We, the Committee on Nominations, beg leave to report as follows:

For President.—S. E. Mulholland, of Fort Wayne.

For Vice-President.—Howard Olds, of Newcastle.

For Secretary and Treasurer.—Philmer Eves, of Indianapolis.

To Serve as Directors for Three Years.—Messrs. S. T. Murdock, of Lafayette; and J. N. Moncrieff, of Blooming; with Mr. A. S. Cooke, of Terre Haute, to fill the vacancy caused through the nomination of Mr. Olds to the Vice-Presidency.

ELECTION OF OFFICERS.

At the suggestion of the President, the Secretary was instructed to cast the ballot of the election to office of the gentlemen named. The

Secretary subsequently reported that the instructions had been carried out, and the President announced the results.

The officers-elect, having responded to the action of their fellow members, the President congratulated the Association on the personnel of those elected, and asserted he could see that next year's meeting would be everything that it should be. He then called for the

REPORT OF COMMITTEE ON PLACE OF MEETING,

which was submitted by Mr. Dunbar (Chairman) as follows: I will state, Mr. President, that, if it had not been for violating well known rules of hospitality, I believe the entire membership of the Association would have voted to meet again in Fort Wayne. The report of the Committee is as follows:

We, your Committee on Next Place of Meeting, report in favor of Indianapolis.

JAMES W. DUNBAR,
CLEMENTS BLANK,
WM. I. BATTIN,
} Committee.

The President—Gentlemen, you have heard the report of the Committee on Place. What will you do with it? [Adopted.] There are two amendments to the Constitution before this meeting. The Secretary will please read them.

The Secretary—Mr. Thwing, would you like to move that Section 5, paragraph 17 of the Constitution, shall read: "The retiring president shall be, ex-officio, a member of the Executive Committee for the ensuing year?"

The President—I do not believe a motion is necessary. That was acted on by the Executive Committee.

Mr. Thwing—If it is necessary to bring it before the meeting, I move that, as it has been accepted by the Executive Committee, the amendment be adopted. [Carried.]

The Secretary—Section 3, paragraph 6, reads, "To be eligible for active membership a person must be an officer, stockholder or an employee of a gas company in the State of Indiana." The proposed amendment is to strike out the word "stockholder."

The President—This amendment was proposed by Mr. Thwing, and he has already informed me that he wishes to speak on this matter.

Mr. Thwing—I have very little to say on the subject. It strikes me that the word "stockholder" is superfluous in the constitution and by-laws as making a person eligible to active membership. We have a Company in the State of Indiana with whose business policies I doubt if any member of the Association is in accord. This Company has several thousand stockholders. The section referred to would make any of these stockholders, or all of them, active members of this Association. They could be the ruling factor of the Association and dictate its policies. While there is not any probability of any such a thing occurring, I believe that the governing laws of an Association should be safeguarded as far as possible, and I think the Association would do well to strike out that word. I do not know of any other body of the kind which has in its laws any such qualification as that for active membership.

The President—I might say right here that, being one of the charter members of the Association, and being present at the time the Constitution and By-Laws were drawn up and adopted, there was some particular reason why we inserted the word "stockholder." My memory is not absolutely clear, but I believe we had some condition in view which might cover the case of a man that we would like to have in the active membership of the Association who was not an officer or an employee of a gas company in the State of Indiana. Now, if there are any other gentlemen who were present at that initial meeting, who remember exactly what the reason was, I would like to hear from them.

Mr. Dunbar—I was present at that meeting, and the idea that prompted the insertion of the word "stockholder" was, as the President has said, that it had special reference to a person who was a stockholder in a parent company which operated several gas works in the State of Indiana, but in which he was not an officer or an employee, only a stockholder, and we considered him as a very valuable addition to our list of members and wanted to get him in. I think that was the idea that prompted the insertion of the word.

The President—I think I am safe in saying that that gentleman is an active member. I do not believe since that time anybody has availed himself of this particular clause in our constitution. Personally I do not believe that leaving it in or striking it out will make any difference as far as the Association goes. Will you make that in the form of a motion, Mr. Thwing?

Mr. Thwing—I move that the section as read be amended by striking out the word "stockholder," and, as I said before, I agree with the President that it probably will make no difference. At the same time we all know that loosely constructed articles in a constitution and by-laws or charter, or in any instrument of that kind, may cause trouble later on, and it is better to avoid that trouble wherever possible.

The President—Mr. Mulholland, I am very glad and happy to inform you that you have been elected President for the coming year. Mr. Olds has kindly advised us that you have prepared a set speech of acceptance which you wrote beforehand. The time is limited, but we shall be very glad to hear it.

Mr. Mulholland—I wish I could express a like amount of happiness and enthusiasm. I am very much pleased and gratified, of course. A man who would not be deeply sensible of the honor of acting as the President of this Association to-day lacks everything that he should have to qualify him for the place. I have no set speech. I have been rather inclined to believe for the last 48 hours that this movement was on foot, so I cannot say, this "is so sudden." The Indiana Gas Association is fast making a place for itself. If I had been elected President of the Association 2 or 3 years ago in the beginning I perhaps would not so much feel my incapacity for the place, and it would not be so hard to fill, because of the precedents established. It will be my pleasure, of course, and my duty, too, to follow the *regime* of former presidents, for whom, I believe, this organization not only has the greatest amount of respect, but love and admiration and confidence in their ability. If I can only at the end of the year say to myself that I believe I have done half so well as those who have preceded me, I shall be more than delighted and satisfied. I thank you very much.

The President—I will simply reply to Mr. Mulholland that anybody who can get up as nice a gas exhibit as he has done, the Association need not worry about his success as President. I am very glad to have the Secretary advise me that we have some applications for membership in this Association. I will ask the Secretary to read them, and before doing so will state that they have all been approved by the Executive Committee and it is only necessary for us to act on them as an Association.

The Secretary—The

APPLICANTS FOR MEMBERSHIP

are:

Anderson, T. B., Fort Wayne.
Battin, W. I., Lafayette.
Bell, O., Brazil.
Cheeseman, O. D., Indianapolis.
Calvin, J. E., Muncie.
Curfman, F. G., St. Louis, Mo.
Fink, E. O., Fort Wayne.
Forder, S. W., Michigan City.
Hutchinson, N. P., Bridgeport, Conn.
Hoven, C. W., Anderson.
Kaufman, H., Indiana Ltg. Co.
Lovett, E. C., Detroit, Mich.
Lynn, J. T., Goshen.
Mueller, F. B., Decatur, Ills.
Moriarity, H. C., Fort Wayne.
Macbeth, N. Gloucester, N. J.
Moran, F. J., Battle Creek, Mich.
Maxon, J. H., Muncie.
Maxon, H. R., Muncie.
Millspaugh, H. L., Anderson.
Myers, E. B., South Bend.
Olsen, E., Crawfordsville.
Odell, W. H., Indianapolis.
Printz, C. H., Cincinnati, O.
Pitcher, T. W., Indianapolis.
Potter, J. L., Milwaukee, Wis.
Ray, W. D., Hammond.
Reynolds, M A., Anderson.
Rutherford, R. M., Muncie.
Strain, J. R., Lafayette.
Schornstein, F. E., Richmond.
Schutt, H. L., Buffalo, N. Y.
Smith, T. O., Jr., Pittsburgh, Pa.
Schall, W. D., Chicago.
Schell, H. D., Chicago.
Stevens, C. N., Chicago.
Stewart, C. J., Lebanon.
Vance, J. C., Shelbyville.
Wardell, C. W., Philadelphia.

ELECTION TO MEMBERSHIP.

On motion of Mr. Mulholland the Secretary was instructed to cast the ballot of the Association in favor of the election to membership of the names submitted. The Secretary subsequently reported that the instruction had been carried out and the President welcomed the gentlemen in appropriate speech.

Mr. A. S. Cooke here submitted the following

REPORT FROM COMMITTEE ON PRESIDENT'S ADDRESS.

To the Indiana Gas Association: Gentlemen, the Committee on President's Address recommends that all members be sure they are in possession of a copy to carry to their homes, so that they can study this well worded and splendidly compiled address at their leisure and absorb the many salient and instructive points presented.

The question of publicity in public utility companies is one that merits particular attention, as through this medium the corporations and the public will be brought closer together and many of the disputed questions of the day eliminated thereby.

With a proper publicity campaign the public would soon become educated in the conduct of the industry to a sufficient extent that no difficulty would be experienced in establishing a proper minimum

charge for services rendered, the justice of which would be fully recognized.

We also recommend that each member take a few extra copies of this address, if possible, and present them to their officers and other interested parties, and that a rising vote of thanks be extended to the President for his able and conscientious address.

A. S. Cooke,
H. L. Olds,
W. E. Steinwedell, } Committee.

Mr. Mulholland assumed the Chair, and, on motion of Mr. Dunbar, the report of the Committee was accepted by rising vote.

The President—I can only thank you. I simply gave expression to what I felt were practical conditions, and if you agree with me, I feel we are pulling together. We have now cleaned up all business of record save the roll call. Before that is called I would ask if there is any miscellaneous business?

Mr. Davis—I wish to make an announcement, although it is hardly the business of the Association. Next summer, the last three days of June and the first day of July, the "American Chemical Society" have their annual convention at Indianapolis. They have a membership of about 6,000 in the United States, Canada and Mexico, and we expect to have 600 men present at this convention. With the permission of the President, and as a member of the Executive Committee of the "Society," I wish to issue an invitation to the members of the Indiana Gas Association to attend that convention and hear the papers read. If you come down there as guests of the local section, you will be well taken care of, and if you will drop me a line between now and the time of the meeting, I will see to it that suitable arrangements are made.

The President—It does not seem necessary to take any action on that, save that the Secretary should send the invitation to all the members. That will come in the report.

Mr. Lynn—I did not want to say anything until I was a member, and I move a vote of thanks to the Entertainment Committee. I think the entertainment last night was one of the pleasantest in which I ever participated.

The President—Gentlemen, you have heard Mr. Lynn's motion in reference to a vote of thanks to the Entertainment Committee, which I heartily second. All in favor of the motion rise. It is a unanimous vote. We will now have the paper by Mr. W. I. Battin, on

DISTRIBUTION.

Mr. Battin prefaced his paper by remarking that Mr. Danforth, Superintendent of the Fort Wayne gas plant, had a chart which he would pass around. He thought all would be interested in it, and possibly it would be all the better were Mr. Danforth to explain its lines.

This was done by Mr. Danforth, as follows: The chart was taken from a record of gauge on the steam line of the works. It so happened that we started some improvements along in the winter, which necessitated considerable work on the boilers, etc. The steam was generated in one boiler and a locomotive engine was run up on a side track and connected to a steam line to be used in case of emergencies. Christmas morning—it happened that some of my wife's relatives were to be down and I rather anticipated a very nice Christmas—at 6 o'clock the 'phone rang and the fireman at the works told me there was a ruptured tube in the boiler, so that it became necessary to put on the locomotive, which had been equipped with a 2-inch blower in the stack. We put a piece of old smokestack on the engine, and ran Christmas day with the locomotive engine. It happened we had made arrangements with the Nickel Plate Railroad to provide us with a locomotive fireman, who would be able, we thought, to get more efficiency out of the engine than one of our own stationary engineering firemen. It happened that on Christmas, along with other little incidentals, that they couldn't provide us with a regular locomotive firemen, so we had to run with our own man. I thought it was probably the first instance where a gas works had ever been run on Christmas with a locomotive engine as power. We operated an 8-foot 6 inches set with 65-horse power turbine and feed pump to supply the engine with water, which it sometimes did and sometimes didn't. The compressor is a steam heating proposition, and the exhausters, of course, had to be operated, also a few other small engines and pumps about the works. I think we did exceptionally well for the engine we had. The engine is still on the side track, equipped as it was at the time, and any of the members who happen to go down this afternoon can see the relic as it stands there. Mr. Blair, Superintendent of the Division, asked me some time ago if we would like to buy the engine; as we are paying $5 a day for its use, for having it there, I told him I thought we had already bought it.

Mr. Battin then went on with his paper, as follows:

In Indiana we have a condition that exists perhaps nowhere else; namely, a number of small towns have long enjoyed the comforts of natural gas, and are, therefore, eager to continue the use of gas. Undoubtedly many towns will put in gas plants that in other States would not be considered at all. To these any hints that may help to work out a correct distribution system for artificial gas will be welcome. The same will apply to small artificial companies that are rapidly expanding their business. On that account, in the latter part of this paper, certain points will be brought to your attention which are so very elementary that everyone is familiar with them, yet they are nearly always neglected by the smaller companies.

The Indiana Association has had the benefit of valuable papers at its previous meetings on distribution subjects, and especially the question of rehabilitating old distribution systems. The experience of these companies has shown many interesting things; for example, the shallow depth at which the old mains were laid, and the fact that they were laid without reference to grade and without expansion joints, led artificial gas men to fear that they never could be found suitable for the distribution of artificial gas. The fact is that they have been found remarkably satisfactory. Except in the immediate vicinity of the gasholders, where the moisture in the gas is quickly dropped out, there has been very little trouble from trapped mains. Again, breakages due to the shallowness of the mains have been hardly more frequent than in the case of mains laid deeper, and the same thing answers the much-mooted question of what kind of expansion joint to use. It has been customary with artificial companies to provide an occasional lead joint for expansion in cast iron lines laid with cement joints, and also to provide expansion joints in wrought iron lines. These joints, generally speaking, have been found to show no signs of having performed the function of taking up expansion. The experience here in Indiana is convincing that no expansion joints need be used at all, the only precaution being that, in the case of wrought iron mains, either malleable fittings or extra heavy cast iron fittings should be used, on account of their comparative strength; and while it is advisable in going over an old system to make any necessary openings and tests at the lowest points wherever possible, and to put in drips in such cases, still it may be taken for granted that the expense of digging up and regrading and relaying mains (except ahead of paving) can be forgone until such time as trouble from water in the mains shows up at any particular point. Many small plants can thus profitably put in gas where the complete reconstruction of the plant would be prohibitive. In running new mains, however, a depth should be used to give 30 inches cover on the pipe, and, of course, cast iron mains will be put in instead of wrought iron where new pipe must be bought. Where drips are installed there should be line drips or other large drips so that the gas pipe itself will not contain water. A tap in the bottom of the main should never be used for a drip, but the main should be cut out to connect the drip.

Another point that has been brought out by the use of the old system for artificial gas is that the rubber in rubber-packed sleeves has withstood the effect of the artificial gas for many years without being destroyed. We are, therefore, safe in using this very handy type of sleeve for connecting mains and services. The question of electrolysis of mains is especially important in Indiana, because of the wonderful system of interurban lines in our State, many of which parallel gas lines between towns. Where gas lines are run without expansion joints they form practically a perfect conductor without breaks. On this account there is not the trouble from electrolysis at joints, even though the quantity of current carried by the mains is greater. Usually the points where the current leaves the mains is very definitely localized, and good success has been had in overcoming the eating out of pipes by bonding back at these points to the rail or to the ground wire at generating stations.

Our company has worked so far on the assumption that the best plan for distribution of gas is still the old, direct holder pressure system, using, say, 35-tenths pressure. Even where small towns are supplied by long distance lines, it is preferable to feed into a holder and then distribute with a low pressure system. Where single-lift holders are used a governor is unnecessary, although, of course, the automatic increase in pressure given by these governors at the time of heavy consumption is an advantage. If a holder is not used the next best plan is to feed into the distribution system from the

high pressure line by large governors maintaining a uniform low pressure, rather than by carrying a high pressure up to the consumers' premises and using regulators on each service. Again, where a town has so increased its sendout as to have outgrown the feeder mains from the holder, it is preferable to run a new, large feeder into the heart of the heavy consumption district, rather than to boost the pressure by exhausters. To be sure, some of the largest cities are arranging to pump up all the gas they send out to a pressure of, say, 5 pounds, and then feed from the booster mains by means of governors placed throughout the city at different points. This, however, the writer does not approve. In the case of outlying districts which have trouble with shortage of gas, it is better to select one main to supply that district, by cutting off the branch mains and boosting the pressure on that line, but still to carry the main part of the sendout direct with the holder pressure by large feeder mains. The booster main can be connected direct into the mains in its own territory with no governor or other regulator, except, perhaps, valves may be used to direct the flow in different directions. The booster or fan exhauster should be run only at times of heavy pull on the mains, and the pressures in the district so supplied will automatically regulate themselves by feeding back any excess through the old connecting lines. Of course, recording gauges should be installed in such districts for a daily record of pressures.

In running a feeder main to supply the big flow of gas it should, of course, connect into as many large pipes as possible, but especially it should feed right into the center of heaviest consumption. We are fortunate in having an easy way to determine this point, as the consumer's ledger footings for each block in the city can be shown by means of 1 dot in that block on a small map of the town for, say, each 10,000 feet used in any month. A map so plotted will show at a glance where the gas is used by the relative shading of the different blocks, according to the number of dots in them. Another point, however, must be carefully considered; namely, the probable direction of future growth of the city. Where real high pressure is used it is remarkable how small a line will suffice to supply a given district, because there is so much gas stuffed into the line, as it were, that it carries over the peak load. Where the moderate pressures of, say, 5 to 10 pounds are carried, this effect is very slight, so that a line must be calculated for nearly the full carrying capacity at the time of heaviest consumption. Roughly, the rate at which gas is used during the times of heaviest pull will be about ⅛ to ¼ of the full 24 hours' consumption. In other words, if you are sending out 70,000 in 24 hours, there will be times when your rate of sendout will be such that if kept up it would amount to, say, 10,000 per hour. Even on the long runs between towns we prefer mains large enough to supply the gas with only about 10 pounds initial pressure.

The foregoing is, as stated, the writer's own idea as to the best style of distribution to adopt; his objection to high pressure systems being the large amount of personal supervision required by compressors and regulators. And he believes for small plants the more nearly automatic the system the better. In other words, it is preferable to pay interest rather than wages. There are among us, however, ardent advocates of these more modern systems of distribution, and if a good discussion is evoked on this account the writing of this paper will have been justified.

The following are some of the minor points in connection with correct distribution which, as previously stated, are familiar to all, but are given here because of their importance. First of all is the accurate measurement of the gas into the holder or distribution system by a station meter. How often are station meters tested? As a rule very seldom; yet it is a comparatively easy thing to do each year. If the casing around the clock is removed and a wire pointer is put on the shaft coming through the case, and the inlet valve cracked so very slightly that the pointer moves slow enough to take, say, 20 minutes for a revolution, then if the revolution has been comparatively uniform so that each quarter took about 5 minutes, it is practically certain that the meter is correct, provided the water level is kept right; because, generally speaking, the only trouble with a meter will be a hole in the drum, which, if it exists, will be instantly seen by the drum ceasing to revolve when this hole is above the water or at least slowing up on that quarter. Now that is why this should be the first test to make, for if there is a hole in the drum the meter must be dismantled and the hole repaired. Assuming that the drum is tight, it is only necessary to determine how many feet the dial shows for one revolution of the drum. This is done by turning the clock by hand 10 revolutions (100 is better) of the gear wheel on the shaft coming through the case. From this we will find, say, that 53 feet is shown on the dial for each revolution of the drum (before the meter was shut down this could have been gotten by the observation of 100 turns of the shaft in place). It is then only necessary to pass gas through a test meter and the station meter in series (all valves being water sealed to guard against leakage) and seeing if 53 feet on the test meter makes exactly one revolution of the pointer. If it does the meter is correct; if, not, the water level must be changed until it is correct. At all times, however, the temperature of the room and of the water in the two meters should be kept practically the same as that of the gas, or else corrections will have to be made for temperature. The pressure should also be kept at a uniform point, say 2 inches, at the outlet of the test meter. No other method of testing a station meter except by an exact revolution of the drum should be used.

The water line in station meters should be kept at all times at the right level by a continuous trickling of water into the meter and out again through the sight feeds. The gas must be corrected daily for temperature of the gas at the station meter and for barometer. It will be close enough to use the barometer given in the daily newspaper reports for, say, Indianapolis, or to use the normal barometer for the State for that month.

The next point is to have the consumers' meters always read at approximately the same relative time each month. On account of rendering bills to the consumers on time it is generally customary to take some date about the twenty-fifth for the beginning of the index month; that is, all corrected gas sent out from 7 A.M. that day to 7 A.M. of the twenty-fifth of the month following is compared with the gas sales shown on the consumers' ledger totals for that month. (These totals are not corrected in any way.) It is, therefore, imperative that meters be so read that in all months the same half of all meters are read on the sames dates preceding 7 A.M. of the twenty-fifth and the remaining half correspondingly after 7 A.M. of the twenty-fifth. Likewise, the reading of skip meters should be done as quickly as possible after the regular readings. Even under these conditions the unaccounted-for gas from month-to-month will show wide variations, but the general average over any period will be quite correct.

The testing of the consumers' meters, so often neglected, should be done every 3 years; that is, at the time of slackness of other regular work all meters in service 3 years or more should be removed and tested. This pays for itself in increased revenue, inasmuch as the meters usually run slow.

It is essential that sketch cards be used to show the details of all main work. From these cards a map of all mains should be kept up to date. (As the sketches are in detail nothing but the size of lines need show on this map.) And what is just as important, the exact number of feet of each size of main in the system should be kept correctly totaled up. Then these totals should be converted into the corresponding amounts of 3-inch main for the whole system—1 mile of 2-inch main = two-thirds mile of 3 inch, 1 mile of 6-inch = 2 miles of 3-inch, etc. If, now, the unaccounted-for gas for the average of, say, 12 months, equals more than 100,000 feet per mile of 3-inch main per year, after it is sure that the meters are in good condition, then the main system must be gone over for leakage. For obvious reasons unaccounted-for gas figures on a percentage basis have little value.

In locating the causes for low pressure in any district it is almost certain that jumping of pressure signifies water trapped in the main. Even if the jumping is slight, the main may be nearly filled with water. You hear all sorts of explanations given for pressure variations, such as wind blowing on the holders, etc. But the writer has never been convinced of such causes. Where trouble exists on the large lines it must be looked for at the time of heavy consumption by setting pressure gauges along the line and noting where the heavy drop in pressure occurs. A recording gauge is very handy for this purpose, as the pen will vibrate badly when you come near to where the water is. If there is no vibration, but only a drop of pressure, it is probably due to naphthaline or other solid deposits. It is a waste of time to look for trouble on the large lines except at time of heavy consumption. But on smaller mains, say 6-inch and under, an artificial consumption can be created, at any time, by taking out a good sized plug (say 2-inch), thus causing a drop in pressure sufficient to locate the stoppage. The plug can be taken out momentarily every half minute and immediately replaced while another man goes with a gauge from house-to-house to see which one shows a drop in pressure. In these cases the ordinary siphon gauge with a hose can be attached to any fixture. But, of course, all permanent

gauge installations should be made on a separate service, or at least a separate run from the inlet side of the house meter.

In bagging off mains for any purpose whatever the writer prefers to us a stopper on the pressure side of the hole and then a bag on the other side of the hole. A 2-inch pipe is then laid against the hole and clayed up, and extends above the ditch. All leakage past the stopper is thus shunted out of the ditch and not even a trace of gas is left to bother the workman. Likewise, no service should be connected without using the service "T" with rubber plug, so as to have no gas on the service while it is being run. The use of company numbere on meters, with proper record books, is absolutely necessary to keep an accurate record of meters in service.

In setting meters the old style of using the solid inlet connection and a lead oulet connection, except above 10-light (in which case all iron connections are used) with a shelf under the meter assure a good job. The best authorities state that, no matter what style of the many recently gotten out connections is used, a shelf fastened separately is still necessary.

In laying street mains, unless the records of intersections are accurate, it is always well to dig up points where connections are to be made with other pipes, for obstructions are likely to be encountered some time in advance of starting in the regular laying of pipe. In this way the exact special fittings required can be on hand when the work is commenced. Dead ends on main should be avoided whenever possible by tying them together to give circulation.

No main to help out pressure should be laid into a district unless recording gauges have been used to show that the point from which the main is to be laid has a pressure sufficiently high to justify it and is the best place from which to run the main.

In all kinds of distribution work the tools used by the workmen should be carefully watched. Tools in bad condition, or a lack of proper kind of tools, are sources of greatly increased cost of doing work as well as liable to cause accidents. "A good workman never complains of his tools," but you will always find that he has a kit full of all kinds of tools used by his trade and they are in good condition. "You cannot saw wood with a hammer."

A record should be kept of places where trouble is experienced from freeze-ups on services or on pipes crossing bridges, etc. And even some companies keep a record of freezeups of house riser or other house piping, so that where these troubles are repeated at the same point a change can be made in the piping by inserting anti-freezers or other protection. In this way the number of complaints of poor service can be systematically reduced; in fact practically eliminated.

In conclusion let me say that the company by which the writer is employed is interested above all in giving good service to its patrons, and is anxious to know of any way this service can be kept up to the point of highest efficiency. They are glad to give any information to others in the gas business and likewise to learn from you, who represent other companies, what you are doing to accomplish these same results.

Discussion.

A Member—The Association is to be congratulated upon the able and highly instructive paper of Mr. Battin, and the experience and knowledge of distribution placed before this Association are well worthy of more than a passing thought. The details and wrinkles that Mr. Battin gives us should be cherished and applied by us when occasion presents. I can indorse what has been said in the paper in reference to rubber in rubber packed sleeves—since laying out a high pressure belt line, of approximately 5 miles of 4-inch wrought iron pipe, which was jointed with this type of coupling, and several miles of smaller pipe, down to 2-inch, we have not found any reason to regret the adoption of this style sleeve. On the contrary, we lifted a line of this class of main to replace with low pressure main to provide for street improvements, and found the couplings in such a good state of preservation that they were used in relaying the line at a different location. The ideal system is, of course, low pressure, with trunk mains of sufficient size and arrangement to provide for an even distribution throughout the system. It sometimes takes years to work out the ideal, and in the meantime situations and conditions must be met, especially those situations and conditions that are inheritances from our forefathers, who knew not whereof they builded. That cities and communities will grow, and that the people of those cities and communities will demand the ideal lighting, heating and cooking agent, go without thought of contradiction; hence, it behooves those of us who have these matters in hand to look well into the future and build for coming generations. In regard to cutting drip tubes on wrought iron mains, I have a suggestion that perhaps will be of some benefit to those directly interested. In the process of reconstructing a natural gas system to one of manufactured gas, I found the mains badly laid and these in time began to give trouble. We tapped main on top through to bottom, using saddles, both top and bottom, then installed horizontal "drip-tub" made of 6-inch wrought iron pipe, using caps at each end, tapping cap at inlet end with 1 inch and at outlet end with ¾ inch, the inlet and outlet being alternate, top and bottom. This saved excavation for using type of drip-tub and allowed the laying of horizontal tub in trench excavated to line of curb for drip outlet. Just a word as to district holders. I have been so fortunate as to have had some experience in this connection, and that experience I give to this Association. Two holders, one of 60,000 capacity the other of 35,000 capacity, situated about 1 mile from the works, were connected with 8-inch independent main to independent exhauster, steam connected at works and used for distribution of hilly district. A valve on main leading to the district was used to throw district on the works holder during the day load, and to throw the two holders on during night load. An electric contact with necessary bells and signals kept the works informed as to high and low of district holders. I can heartily second Mr. Battin's desire, that if a good discussion is evoked on this account, then our interest in the Association and the subjects presented for consideration have not been in vain.

The President—I regret exceedingly that the time for adjournment is at hand. I am sorry the members did not heed the advice given yesterday to come on time, but I feel we ought, in deference to Mr. Mulholland's wish to get the members over to the exhibition, adjourn very soon. I, therefore, suggest that if any member wishes to discuss this paper, to send the discussion to Mr. Eves who will forward it to Mr. Battin and it will be published in the "Proceedings."

Resolutions of Thanks.

The Secretary—Mr. President and Gentlemen, I have very great pleasure in offering the following resolution for the consideration and acceptance of the Association: "That the heartiest thanks of the Indiana Gas Association be extended to all those manufacturers of gas lighting, heating, mechanical and cooking appliances and their representatives, for their most successful co-operation in making the 'Gas Show' at Fort Wayne one of the finest and most comprehensive gas exhibits in this country, outside those of Chicago, New York and Boston." [Seconded and adopted.]

Mr. Dunbar—I offer the following resolution: "That the President, officers and members of the Indiana Gas Association appreciate and acknowledge the generous and friendly publicity given to the proceedings of the Indiana Gas Association and the exhibit of gas lighting, heating and cooking appliances, by the public press of this progressive city of Fort Wayne." [Seconded and adopted.]

The President—It is the desire of Mr. Mulholland that we all adjourn in a body to the exhibit, to meet again at the hotel at 2 o'clock. In closing I wish to thank you most heartily for your support in the attendance on this meeting. I think it has been fairly successful, and I think we can all go away feeling that we are benefited by having come together. Just a word more that I hope will assist the incoming President. We are getting to be quite a large organization now and in order to make a meeting successful it is necessary for everything to be done promptly. I am very sorry that notwithstanding the fact that we sent out return postal cards for the members to designate whether or not they would attend the meeting, not over 60 per cent. of the entire membership responded. I sent away personally 25 or more letters in reference to discussions, and I think had just one written reply, which was from a man who said he would not be here. Now, gentlemen, it means a lot of work to prepare for these meetings and to make them successful, and your hearty co-operation, I am sure, will be appreciated by the incoming President. I thank you all.

Mr. Thwing—Before we adjourn I believe I voice the sentiment of this Association by moving a resolution of thanks to the President and Secretary for their untiring efforts to make this meeting a success, and as a citizen of Fort Wayne, wishing to make it particularly emphatic, I move a rising vote. [Seconded and adopted.]

The convention was then declared adjourned.

The North Adams (Mass.) Gas Light Company will hold a demonstration exhibition of gas and electric appliances the third week in April, the display to be held in Grand Army Hall. The exhibition will be open each afternoon and evening, from 2 to 9:30 P.M.

Management and Commercial Methods.

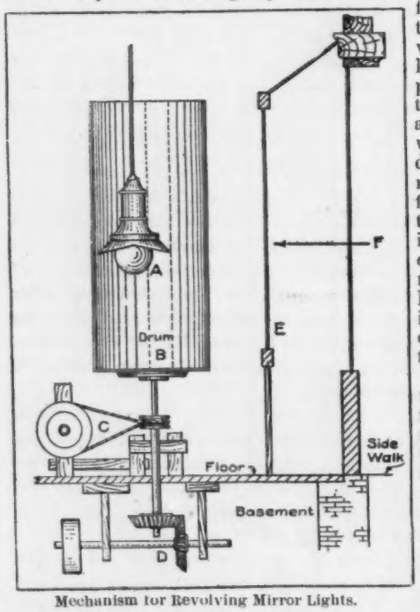
Merchants' Street Lighting, Chicago, Ills.—The Commonwealth Edison Company, Chicago, has successfully followed a street lighting campaign with tungsten ornamental standards, which could be advantageously applied to gas arc lamps.

It offers a 4-light standard, equipped with four 60-watt tungsten lamps, under a 2-year contract, for $1.50 per post per week. The lamps burn from dusk until 10 P.M. for 6 nights per week, and from dusk until midnight for 1 night. It is reported that some 1,600 posts have been installed. The gas equipment, described in the JOURNAL dated December 5, 1910, would be suitable for this purpose.

Mirrors and Lights for Advertising.

Description of the Mechanism and Some of the Effects.—What may be termed the semi-mysterious uses to which mirrors are put have been utilized on occasions to advantage for advertising purposes. They have been used in a practical way for advertising in show windows in conjunction with gas illumination. The advantage of mirror lights for such a purpose can be readily seen when it is known that they are utilized in some of the ingenious arts of magic employed for the entertainment of audiences in theaters.

As a suggestion it may be stated that mirror lights have also been introduced for use in the home where the hostess may have a desire to interest the guests with mysterious effects in a studio or hallway. For instance, in one case a novel effect of the mirror light was made in such a manner that a plate mirror suddenly changed its surface from the plain reflecting aspect to a clock with all the hands and figures denoting the time thereupon. The clock would show its face just long enough to let the people present notice the time, when the changeable gas illumination would cause the clock to disappear and the mirror reappear in its original form. Mirror lights, further, may also be seen in service for toy sets for children. In fact, the range of the mirror lights with gas brilliancy is getting into quite an extensive field of operation.



Mechanism for Revolving Mirror Lights.

The principle in all the uses of mirror lights is the same. It consists of the utilization of two systems of gas illumination. So long as the gas illumination in front of the mirror is more powerful than the gas illumination behind the mirror, persons in front can see only what is on the front surface of the plate. Commonly, the front surface is made the same as the ordinary reflecting mirror.

When it is desired to use the mirror for advertising or attracting purchasers to show windows, the mirror is placed in the show window so that people from the sidewalk can see their faces reflected in it. The attractiveness of the mirror consists in so operating the lights that while the people are looking into the mirror, instead of seeing their faces reflected or other objects reflected in it, some other figure is thrown on the mirror from the rear. This is accomplished by lowering the lights in front of the mirror and turning up the lights behind the mirror. Then by having lettering or figures or some design on the back of the mirror plate they will be projected on the face of the mirror, and the persons standing on the sidewalk will see these objects portrayed on the front of the mirror. This, as may well be imagined, is quite successful in arousing the curiosity of the onlooker and holds his attention. It can readily be seen, therefore, that if the objects placed at the back of the mirror are something in the nature of advertising it can thus be impressed upon the onlookers to advantage. This would readily be concluded if one were to stand by and watch those gazing at the mirror.

The accompanying illustration is presented for the purpose of showing the mechanism which may be used in utilizing mirror lights for advertising. The cut shows the mechanism utilized to get the revolving illumiuant in the rear so that the light will shine brightly a part of the time and be dull a part of the time, and is known as the sectional cylindrical system. The mechanical construction of this device will be readily understood from an examination of the illustration. The drum *B* is simply a half barrel of sheet metal or cylinder arranged upright as shown. A shaft supports this cylinder and is furnished with the necessary grooved wooden wheels to carry the belt *C*. The mechanism for rotating the cylinders slowly is the bevel gear shaft *D*. The cylinders may also be turned by hand, or any motive power will answer.

When the closed side of the cylinder is between the light and the mirror *E*, the light is cut off. When the open side of the cylinder is between the light and the mirror, the illumination is allowed to penetrate the mirror plate and make the lettering on the plate show in front. The line of observation from the street front is designated *F*.

The mirror plate may be varied by using oval forms, perpendicular, if desired, so that the reflected figure of a person may be shown in an elongated manner for purposes of amusement. Or the plate mirror may be placed horizontally and oval, to give the reflected figure of a person a comical, flattened appearance.

The matter appearing on the mirror plate need not always be lettering or advertising. Sometimes figures of skeletons or scarecrows, or some other design to attract attention, may be used on the plate. Cases have come to attention where the view of some trout was shown on the plate and in another case the head of a deer. Such figures are suitable for attracting attention to a window display of sporting goods. It is a case of the shop owner utilizing his ingenuity to design some sort of attractive figures or letters to project on the mirror suitable for his particular line of work.

Items of Interest
FROM VARIOUS LOCALITIES.

THE proprietors of the Citizens Gas Company, of Indianapolis, Ind., have voted favorably on the proposition to increase the capital in the sum of $1,000,000, or from $1,000,000 to $2,000,000. When General Manager J. D. Forrest was asked why it was necessary to make the increase his reply was: "This authorization has no special significance, or immediate necessity." Just handy to have around, so to speak.

MR. E. B. JEWELL has been elected Treasurer of the Dowagiac (Mich.) Gas Company, vice Mr. Russell Harrison, resigned. The other officers of the Company are: President, W. F. McKnight; Secretary, C. E. Sweet.

"PATRICK EGAN, who for 30 years was foreman of the old Detroit City (Mich.) Gas Company, and who was pensioned some years ago by the Company, died at his home on 6th street, Detroit, the morning of the 25th ult. He was in his 89th year, having been born in Limerick, Ireland, September 17th, 1822. He came to America in 1846, and some years later was employed by the Detroit City Gas Company, and never had another 'boss,' as he was wont to say.—M. T. S."

MESSRS. A. M. BRUSE, Samuel Shaw and H. B. Schleuter have been named to comprise the Gas Committee, of Middleboro, Mass. Possibly these gentlemen will have sufficient business acumen to note that the way to improve this municipal plant is to rebuild it.

THE capital stock of the Charleston (S. C.) Railway, Gas and Electric Company is to be increased in the sum of $1,000,000.

IN a petition filed March 29th with the New Jersey State Public Utilities Commission by the proprietors of the Atlantic City Gas and Water Company, it is prayed that the Commission issue an order directing the city to reimburse it for the complete expense incurred in relaying its piping along Baltic avenue to make way for the drainage canal now being constructed through that thoroughfare. In objecting to the tenets of the prayer City Solicitor Wooten claims that the Commission has no jurisdiction, in that the question involves only the rights of the people and that of the corporation, whereas the Commission's jurisdiction pertains only to the settling of questions between the producer and the consumer.

THE grant for the operation of the Union-Endicott Gas Company, of Endicott, is to live for 50 years. The site selected is on that portion of the Endicott Land Company's tract, just east of the Borden Company's plant and north of the Erie Railroad tracks, right on the Union-Endicott village lines. The estimated cost of the plant complete is $40,000.

MR. GEORGE SIPE, for many years in the employment of the Hagerstown (Md.) Gas Company, died in York, Pa., the afternoon of March 25th. He was in his 65th year. His widow survives him.

ON March 29th Vice-Chancellor Leaming, sitting in Chancery Court, Camden, N. J., granted a rule to show cause why the Citizens Gas Company, of Landis Township and the Citizens Gas Company, of Vineland, should not be restrained from laying gas mains and the furnishing of gas to the inhabitants of Vineland and the township of

Landis. The application was made in behalf of the New Jersey Gas Company, and the rule is returnable to-day in Atlantic City.

HERE is another opportunity to exclaim with one of England's greatest poets, "Our sons their fathers' fading footsteps see; and such as Chaucer was shall Dryden be"—and to the poetry we may add, in full belief abetting, by absolute knowledge, the prose that, if this youngster follows his fathers' footsteps faithfully, in time he will reach the hill top upon which the aforesaid father firmly stands. All of which is preliminary that Mr. John Charles Clark has identified himself with the Sprague Meter Company, of Bridgeport, Conn., which concern he will represent on the road. The youngster comes to his new field of work well equipped for travel over it, in that his training mentally was acquired in the following sequence: At the Crane Manual Training School, Chicago; the Washington University Manual Training School, St. Louis; and the Missouri School of Mines, Rolla, Mo. May the best of good luck ever attend him.

MR. LITTLE, writing from Nashville, Tenn., under date of the 30th ult., states that he has been making some experiments with a new preservative for gas mains, basing his working trials on the elaborate tests carried on by Mr. R. B. Harper, of Chicago, whose excellent article on preservatives for iron was published in the JOURNAL some months ago. It is a well-known fact that bituminous paint, made from coal tar and properly treated, is just about as good as any other thing that can be used for buried pipes; but it has its limitations. And these it has been the effort of Mr. Little to overcome, by incorporating into the vehicle an indestructible pigment that will thicken the film. Other additions are made to the vehicle to cause it to spread easily, when cold, so it will dry in moderate time; but not too quickly. The paint is being tried out in several gas works. The beauty about a paint of this sort is that it aids in using up some of the tar product of a gas plant, since the arrangement made with the Atlas Paint Company is that the gas company can furnish its own tar and mix it in the boiling with the paste supplied by the Atlas folks. No great claims are being made for the new preservative, as this perplexing question of preserving mains is one which has been given great attention by many acknowledged experts. Even now, however, the best results of record are not any too satisfying, nevertheless commonsense observers must admit that the latest tests seem to prove that the new paint will prove a betterment on anything heretofore put on the market.

THE Gas Machinery Company, of Cleveland, O., has been authorized to construct for the Jamestown (N. D.) Gas Company a complete new water gas works, to be installed on the old site, or the plot upon which the works stood that were destroyed by fire last fall. The contractors will put up the entire system.

THE headquarters of the Detroit and Suburban Gas Company are to be established in the Losee Building, Trenton, Mich.

MR. RUSSELL CROFOOT, since 1903 in the service of the Peoria (Ills.) Gas Company, has resigned to engage with a local concern known as Rott & Co.

THE Morris Iron Company, of 91 West street, New York, has been awarded the contract for furnishing poles in connection with the ornamental installation on public lighting account at Dallas, Tex. Magnetite arc lamp are to be used, and the posts are to be of cast iron, the standard to be of steel, the surmounting to consist of an ornamental crook. One lamp will be carried on each pole.

GENERAL MANAGER BARNES, of the Cambridge (Mass.) Gas Light Company, has inaugurated the "continuous system" of meter reading. The territory has been divided into three districts, designated respectively as the "Northern," "Central" and "Southern," the bills being rendered on the 1st, 10th and 20th days, the discout period being 10 days. Mr. Barnes has given much attention to the planning of this system, and there can be no question that it will prove popular with the residents of staid and orderly Cambridge.

A BILL is before the New Hampshire Legislature which proposes to incorporate under charter the Rochester and Somersworth Gas Company.

ON the 12th inst. there will be a continued hearing before the Massachusetts Board of Gas and Electric Light Commissioners over the petition of certain residents of Woburn, for an order directing the Woburn Gas Company to make a substantial reduction in its selling rates. At the preliminary or initial hearing, many prominent residents, including several representatives from the live organization known as the Woburn Business Men's Association, objected to the current rate ($1.40 per 1,000), giving seemingly good reasons why a cut should be made, and it was especially dwelt upon that the controllers of the Company were not residents of Woburn.

ON the 1st inst. the new net rate ($1.50 per 1,000) for gas used on all accounts and purposes, became effective in Reading, Mass., per order of Col. E. A. Bliss, Superintendent of the Malden and Melrose Gas and Electric Company, which corporation controls the operation of the Peoples Gas and Electric Company, of Reading. The former rates were: On lighting account, $2.25; for fuel use, $2.

THE Common Council, of Reading, Pa., has adopted the ordinance under which it is directed that the city authorities are empowered to levy a tax of $20 per mile per annum on the gas and steam mains that are operated in the named city.

THE concern heretofore known as the Geneva-Seneca Gas and Electric Company, of Geneva, N. Y., will hereafter be known as the Central New York Gas and Electric Company. It will operate in the towns, etc., of Geneva, Waterloo, Seneca Falls, Phelps, Newark, Palmyra, Lyons and Clyde.

MR. GEORGE SUMMERS, representing certain Indianapolis (Ind.) capitalists, is the applicant for a franchise to construct and operate a gas works in Marion, Ind. The selling rate specified is $1 gross, 85 cents net, with a minimum monthly provision of 50 cents. It is also agreed that, beginning the 6th year from the starting of selling gas, the Company shall pay 6 per cent. of its gross receipts into the city treasury. The time limit between the granting of the franchise and the period of readiness-to-serve is put at 18 months after the franchise is signed.

JUDSON H. BROUGHTON, Vice-President and General Manager of the Waco (Tex.) Gas Company, extends through us an invitation to every Texas or other State gas man to visit the Company's fine new plant at the foot of May street. The manufacturing plant, which is of the water gas type, is up-to-date in every respect.

THE new holder for the Lansing (Mich.) Fuel and Gas Company, which is to be of the 4-lift order, is to have a diameter of 110 feet, a height of 145 feet, and is rated to store 1,000,000 cubic feet. Messrs. R. D. Wood & Co. are to construct it.

ONE thing that can be said about the executive division of the New York and Queens Gas Company, of Flushing, N. Y., is that its members are quite awake to their future, as witness their recent purchase of the convenient and valuable plot at the corner of Myrtle avenue and Farrington street. The betterments now going on there will cost $30,000 or more, and that the expenditure will be properly and beneficially made goes without saying, when one remembers the capability of Engineer Spear—a chap who makes friends wherever he goes; and, best of all, keeps them.

THE 80-cent gas rate by the Laclede Gas Light Company, of St. Louis, is in operation. The Company is also arranging for a large addition to its main system.

THE authorities of Middletown (N. J.) township have arranged with the proprietors of the Standard Gas Company, of Atlantic Highlands, N. J., for the maintaining of 65 mantle lamps at eight of the principal road crossings in the Middletown district. Of these Navesink gets 17; Belford, 14, and Middletown, 10.

THE Lancaster County (Pa.) Railway and Light Company has acquired the properties of the Lititz Electric Light, Heat and Power Company.

MANAGER A. N. CANTRIL, of the Spokane Falls (Wash.) Gas Light Company, has proposed that the City Commissioners install, in the most public place in the City Hall, a complete meter proving apparatus, where consumers may have their complained-of measurers tested up in full view of politician and voter.

THE AMERICAN GAS LIGHT JOURNAL

A. M. CALLENDER & CO.,
PROPRIETORS.

THOS. J. CUNNINGHAM,
ELBERT P. CALLENDER,
EDITORS.

CHARLES H. WADELTON,
MANAGER.

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AGENTS:

New York—American News Company, 11 Park Place.
Germany—Lemcke & Buechner, of New York.
England—Aug. Siegle, 30 Lime street, London.

MONDAY, APRIL 10, 1911.

The Market for Gas Securities.

The market for Consolidated gas was steady all through the week, the variations in selling prices being small despite the fact that trading in it was on a fairly large scale. For instance, yesterday (Thursday) 2,800 shares changed hands. The opening prices to-day (Friday) was made at 145¼ to 145½. Consolidated shareholders surely should have much heart of hope in the annual statement of the New York Edison Company, which tablings terminate in a line or two announcing a surplus of 20 million or so.

Peoples, of Chicago, seems to have discounted the chances for disaster in the election of Carter Harrison for Mayor, since values in it are a trifle better now than they were in the week preceding the election. Lacledes are steady. The inquiry on bond account continues active.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

115 BROADWAY, NEW YORK CITY.

APRIL 10

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share:

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked*
Consolidated Gas Co.	$78,177,000	100	145¼	145⅛
Central Union Gas Co.—				
1st 5's, due 1927, J. & J.	3,000,000	1,000	102	103
Equitable Gas Light Co.—				
Con. 5's, due 1932, M. & S.	1,000,000	1,000	—	105
Mutual Gas Co.	3,500,000	100	155	165
New Amsterdam Gas Co.—				
1st Con. 5's, due 1948, J. & J.	11,000,000	1,000	100	101½
New York & Richmond Gas				
Co. (Staten Island)	1,500,000	100	35	50
1st Mtg. Gold Bds. 5 p. ct.	1,000,000	—	98¼	100¼
New York and East River—				
1st 5's, due 1944, J. & J.	3,500,000	1,000	103	105
Con. 5's, due 1945, J. & J.	1,500,000	—	100	102
Northern Union—				
1st 5's, due 1927, J. & J.	1,250,000	1,000	94	100
Standard	5,000,000	100	—	75
Preferred	5,000,000	100	70	100
1st Mtg. 5's, due 1930, M. & N.	1,500,000	1,000	100	105
The Brooklyn Union	15,000,000	1,000	140	142½
1st Con. 5's, due 1948, M. & N.	15,000,000	—	106¾	107
Yonkers	200,650	500	130	—
Out-of-Town Companies.				
Bay State	50,000,000	50	⅝	¾
" Income Bonds	2,000,000	1,000	—	75
Binghampton Gas Works	450,000	100	—	—
" 1st Mtg. 5's	500,000	1,000	95	100
Boston United Gas Co.—				
1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	5	8
Bonds, 5's	5,250,000	1,000	59	60
Capital, Sacramento	500,000	50	—	35
Bonds (6's)	150,000	1,000	—	—
Chicago Gas Co. Guaranteed				
Gold Bonds	7,660,000	1,000	104	106¼
Cincinnati Gas and Electric				
Co.	29,500,000	100	92	93
Columbus (O.) Gas Co., 1st				
Mortgage Bonds	1,500,000	1,000	96	98
Columbus (O.) Gas Lt. &				
Heating Co.	1,682,750	100	90½	91
Preferred	3,026,500	100	75½	80
Consumers, Toronto	2,000,000	50	200	204
Consolidated, Baltimore	11,000,000	100	106½	—
Mortgages, 6's	3,600,000		89	160
Chesapeake, 1st 6's	1,000,000	—	—	—
Equitable, 1st 6's	910,000	—	—	—
Consolidated, 1st 5's	1,490,000	—	—	112
Consolidated Gas Co. of N. J.	1,000,000	100	15	—
Con. Mtg. 5's	976,000	1,000	92	95
Bonds	75,000	—	—	100
Denver Gas and Electric	3,500,000	—	102	105
Detroit City Gas Co.	6,590,000	—	—	50
" Prior Lien 5's	5,619,000	1,000	97	100½
Detroit Gas Co., 5's	381,000	1,000	75	80
Equitable Gas & Fuel Co.,				
Chicago, Bonds	2,000,000	1,000	—	101
Essex and Hudson Gas Co.	6,500,000	—	39	40
Fort Wayne	2,000,000	—	—	—
" Bonds	2,000,000	—	55	—
Grand Rapids Gas Light Co.,				
1st Mtg. 5's	1,350,000	1,000	100	101
Hartford	750,000	25	190	200
Hudson County Gas Co., of				
New Jersey	10,500,000	—	112	113⅛
" Bonds, 5's	10,500,000	—	108	108⅜
Indianapolis	2,000,000	—	78	83
" Bonds, 5's	2,650,000	—	104½	105
Jackson Gas Co.	250,000	50	82	—
" 1st Mtg. 5's	290,000	1,000	97	100
Kansas City Gas Light Co.,				
of Missouri	5,000,000	100	—	36
Bonds, 1st 5's	3,822,000	1,000	102	104
Laclede Gas Co., St. Louis.	10,000,000	100	102¾	103
Preferred	2,500,000	100	91¾	102
Bonds	10,000,000	1,000	102⅜	103
Lafayette Gas Co., Ind.	1,000,000	100	—	60
Bonds	1,000,000	1,000	60	65
Louisville	2,570,000	50	143	145
Madison Gas and Electric Co.				
" 1st Mtg. 6's	400,000	1,000	106	106¾
Massachusetts Gas Companies, of Boston	25,000,000	100	91⅜	92
Preferred	25,000,000	100	96	96⅛
Montreal Gas Co., Canada	2,000,000	100	218	218¾
Nashville Gas Light Co.	1,000,000	100	110	—
Newark, N. J., Con. Gas Co.	6,000,000	—	56	58
Bonds, 6's	6,000,000	—	137	138
New Haven Gas Co.	2,000,000	25	200	—
Peoples Gas Lt. & Coke Co.,				
Chicago	25,000,000	100	103⅜	104
1st Mortgage	20,100,000	1,000	—	—
2d "	2,500,000	1,000	104	—
Rochester Gas & Electric Co.	2,150,000	50	88	—
Preferred	2,150,000	50	118	—
Consolidated 5's	2,000,000	—	104⅜	105⅛
San Francisco Gas Co., Cal.	15,500,000	—	—	—
St. Joseph Gas Co.—				
1st Mtg. 5's	1,000,000	1,000	100	102
St. Paul Gas Light Co.	2,500,000	100	—	—
1st Mortgages, 6's	650,000	1,000	113	116
Extension, 6's	600,000	1,000	112⅜	115
General Mortgage, 5's	3,447,000	1,000	90	95
Syracuse Gas Co., N. Y.	1,975,000	100	50	55
Bonds	2,047,000	1,000	100	104
Washington (D. C.) Gas Co.	1,000,000	200	390	400
1st Mortgage, 6's	600,000	—	—	—
Western Gas Co., Milwaukee	4,000,000	—	—	—
Wilmington (Del.) Gas Co.	600,000	50	261	—

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FINANCIAL NOTICES.

DIVIDEND NOTICE.

AMERICAN LIGHT AND TRACTION CO.,
40 WALL ST., NEW YORK CITY, April 4, 1911.

The Board of Directors this day declared from the net earnings of the Company the regular quarterly dividend of one and one-half per cent. (1½ per cent.) on the preferred stock of this Company, payable May 1, 1911, to stockholders of record of preferred stock at the close of business April 15th, 1911. The Board also declared, from the undivided profits of the Company, a quarterly dividend of two and one-half per cent. (2½ per cent.) on the common stock of the Company, payable May 1, 1911, to stockholders of record of Common Stock at the close of business April 15th, 1911. The Board also declared, from the undivided profits of the Company, a dividend of two and one-half (2½) shares of common stock on every one hundred (100) shares of common stock outstanding, payable May 1, 1911, to stockholders of record of common stock at the close of business April 15th, 1911. The transfer books for both preferred and common stock will close April 15, 1911, at 12 o'clock noon, and will reopen May 1, 1911, at 10 o'clock A.M.

18 0-1 C. N. JELLIFFE, Secretary.

DIVIDEND NOTICE.

OFFICE OF THE UNITED GAS IMPROVEMENT CO.,
N. W. CORNER BROAD AND ARCH STS.,
PHILADELPHIA, March 8, 1911.

The Directors have this day declared a quarterly dividend of 2 per cent. (one dollar per share), payable April 15, 1911, to stockholders of record at the close of business, March 31, 1911. Checks will be mailed.

1866-5 LEWIS LILLIE, Treasurer.

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Complete, which is sold for the purpose of making room for a larger installation The set is in perfect working order and prices will be quoted upon application. NEW BEDFORD GAS AND

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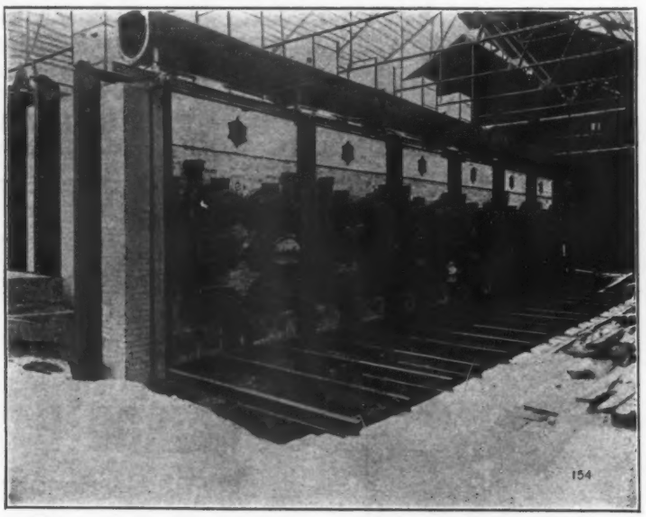

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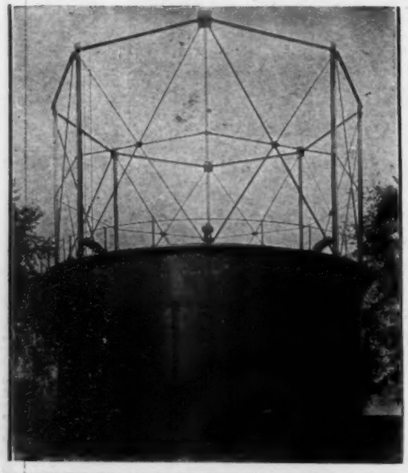

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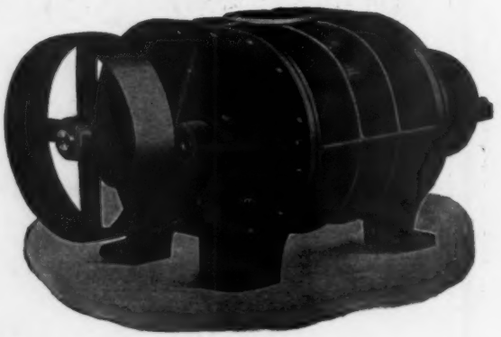

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Lamp is made of heavy sheet steel porcelain enameled throughout.

Slidable Chimney perfectly protects mantle when globe is removed for cleaning.

Uses 9-inch Ball Globe, Half Frosted, Opal or Acid Roughed.

Gas Consumption, 3 feet per hour. Candle power, 119.

POST furnished complete with fittings.

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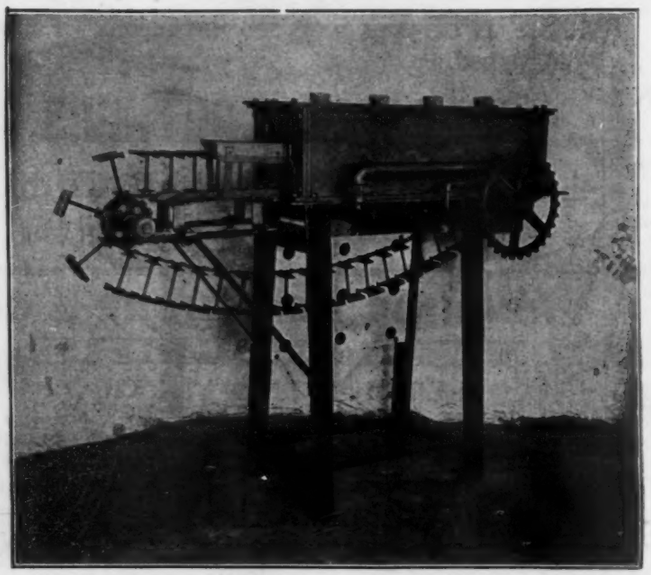
No. 54 Heating Machine.



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SIZE - - } to be done in
KIND - - } given time.

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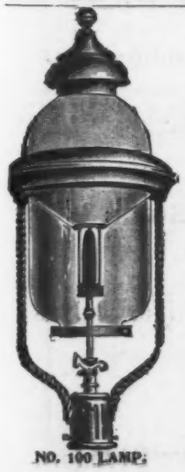

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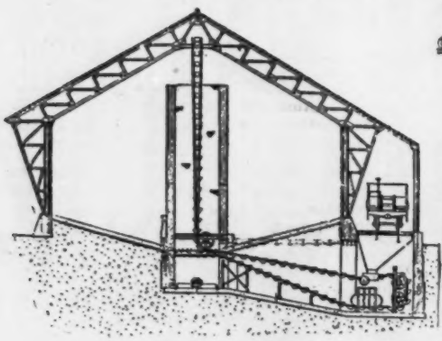

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MEETING TIMES OF THE VARIOUS GAS ASSOCIATIONS.

American Gas Institute.—Annual meeting, October 18, 19, 20, 21, 1911. St. Louis, Mo. Officers: President, Donald McDonald, Louisville, Ky. Secretary, A. B. Beadle, 29 West 39th st., N. Y. City.

Canadian Gas Association.—Annual meeting, June, 1911. ————. Officers President, Arthur Hewitt, Toronto, Ont.; Secretary and Treasurer, John Keillor, Hamilton, Ont.

Empire State Gas and Electric Association.—Annual meeting, Nov., 1911. New York City. Officers: President, C. R. Huntley, Buffalo, N. Y.; Secretary, C. H. B. Chapin, 29 W. 39th street, New York City.

Guild of Gas Managers of New England.—Annual meeting, December. Young's Hotel, Boston; monthly meeting, second Saturday. Officers: President, A. K. Quinn; Newport, R. I.; Secretary, Walter G. Africa, Manchester, N. H.

Illinois Gas Association.—Annual meeting, time, March, Chicago, Ills. Officers: President, C. B. Strohn, Elgin, Ills.; Secretary-Treasurer, H. E. Newberry, Dixon, Ills.

Illuminating Engineering Society.—Annual meeting, Oct. Chicago, Ill., 1911. Meetings of Sections, monthly. Pres't, A. E. Kennelly, Boston, Mass.; Secretary, Preston S. Millar, 29 W. 39th street, N. Y. City. Sections: New York: Secretary, Albert J. Marshall, 36 West 39th street. New England, Secretary, W. S. Farrow, 1210 Massachusetts avenue, Cambridge, Mass. Philadelphia, Secretary, G. B. Muth, 1000 Chestnut street Chicago, Secretary, F. H. Bernhard, Marquette Building.

Indiana Gas Association.—Annual meeting, Jan. 17 and 18, 1912, Indianapolis. Officers: President, S. E. Mulholland, Fort Wayne; Vice-President, Howard L. Olds, Indianapolis; Secretary-Treasurer, Philmer Eves, Indianapolis.

Iowa District Gas Association.—Annual meeting, time, June, 1911, ————. Officers: President, Austin Burt, Waterloo, Ia.; Secretary and Treasurer, G. I. Vincent, Des Moines, Ia.

Kansas Gas, Water and Electric Light Association.—Annual meeting, time, ———— Wichita, Kas. Officers: President, W. A. Scothorn, Hutchinson, Kas.; Secretary and Treasurer, J. D. Nicholson, Newton, Kas.

Michigan Gas Association.—Annual meeting, time, Sept. 20, 21, 22, 1911; Detroit, Mich. Officers: President, A. P. Ewing, Detroit, Mich.; Secretary-Treasurer, Glenn R. Chamberlain, Grand Rapids, Mich.

Missouri Electric Light, Gas, Water Works and Street Railway Association.—Annual meeting, April 13 14 and 15, 1911; St. Louis, Mo. Officers: President, R. J. Irvine; Secretary and Treasurer, W. J. Cunningham, Springfield, Mo.

National Commercial Gas Association.—Annual meeting, December 5-12, 1911. Denver, Officers: President, C. N. Stannard, Denver; Secretary, Louis Stotz, 29 West 39th street, New York City.

Natural Gas Association.—Annual meeting, May 16, 17 and 18, 1911; Pittsburgh, Pa. Officers: President, John M. Garard, Columbus, O. Secretary, T. C. Jones, Delaware, O. Editor Wrinkle Department, F. W. Stone, Ashtabula, O.

New England Gas Association.—Annual meeting, third Wednesday in February, 1911; Boston. Officers: President, W. H. Snow, Holyoke, Mass.; Secretary-Treasurer, N. W. Gifford, East Boston, Mass.

Oklahoma Public Utilities Association.—Annual meeting, May 9, 10 and 11, 1911. Officers: President, E. C. Reynolds; Secretary, Galen Crow, Guthrie, Okla.

Pacific Coast Gas Association.—Annual meeting, Sept. 20, 21 and 22, 1911, Oakland Cal. Officers: President, F. A. Leach, Jr., Oakland, Cal.; Vice President, W. Baurhyte, Los Angeles, Cal.; Secretary-Treasurer, John A. Britton, 445 Sutter street, San Francisco, Cal.

Pennsylvania Gas Association.—Annual meeting, April, 12, 13, 14, 1911, Reading, Pa. Officers President, J. H. Keppelman, Reading, Pa.; Secretary-Treasurer, William H. Merritt Lebanon, Pa.

Society of Gas Lighting.—Annual meeting, December, 1911; monthly meeting, second Thursday. Place, New York City. Officers: President, Fred. S. Benson; Secretary, George G. Ramsdell, Waterbury, Conn.

Southern Gas Association.—Annual meeting, April 19-21, 1911, Montgomery, Ala. Officers: President, H. W. Frund, Salisbury, N. C.; Secretary-Treasurer, Jas. Ferrier, Rome, Ga.

Southwestern Electrical and Gas Association.—Annual meeting, April 27, 28, 29, 1911; Houston, Tex. Officers: President, W. B. Tuttle, San Antonio, Tex.; Secretary, D G. Fisher, Dallas, Tex.

Wisconsin Gas Association.—Annual meeting, May 17 and 18,, 1911, Milwaukee, Wis. Officers: President, W. H. Winslow, Superior, Wis.; Secretary-Treasurer, Henry Harmon, Milwaukee, Wis.

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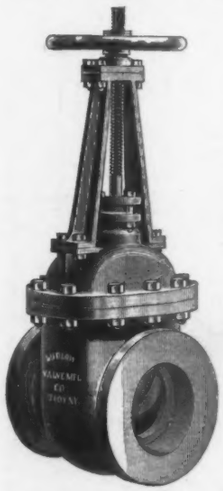

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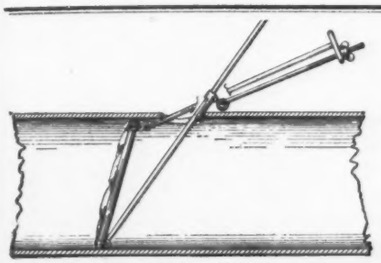

AGENTS.

Pacific Coast—VAN E. BRITTON, 269 Monadnock Building, San Francisco, Cal.

Great Britain—PARKER & LESTER, Ormside Street, Old Kent Road, London, S. E.

GOODMAN STOPPER

The Half Minute

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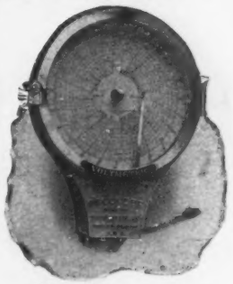

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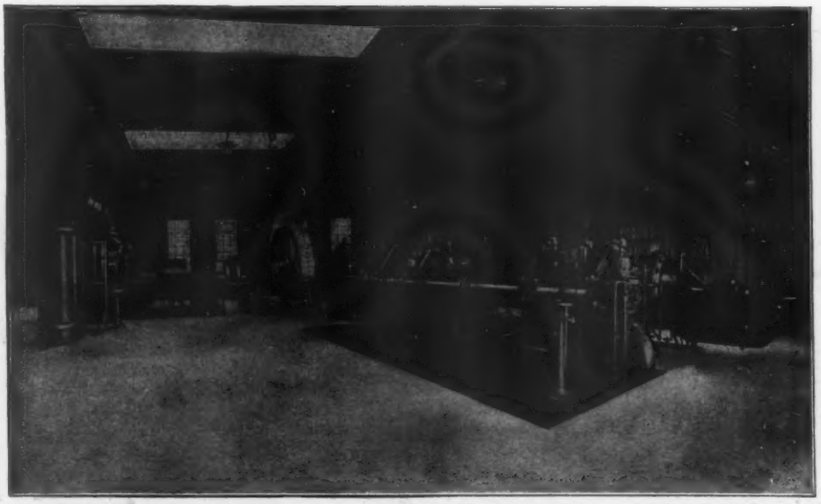
A half century of experience, up-to-date engineering and shop facilities embodied in these **World Famous Gas Exhausters.**



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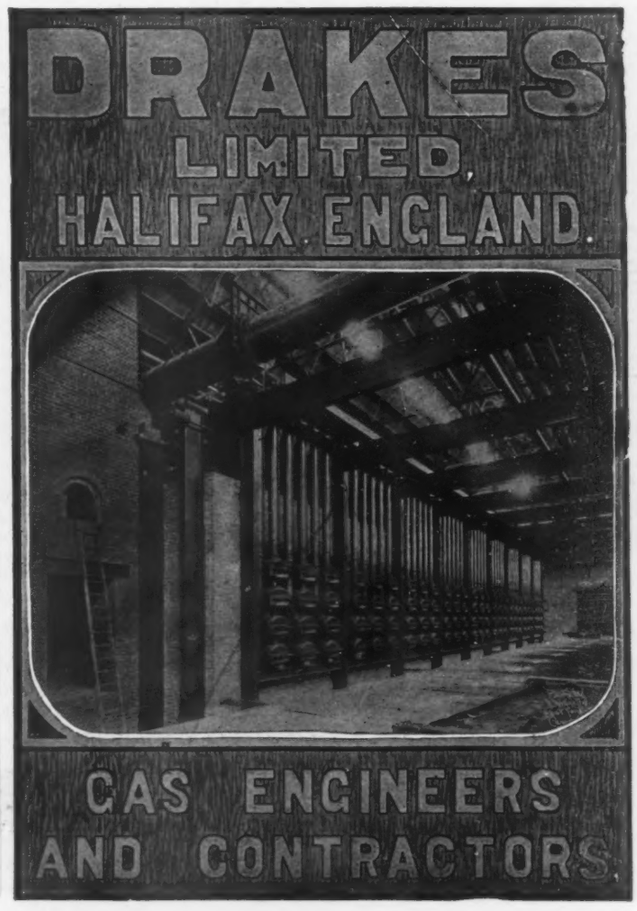
PUBLIC LIGHTING TABLE FOR APRIL, 1911.

[Communicated by The American Meter Company.]

Day of Week.	MOONLIGHT SCHEDULE.		
	Date.	Light.	Extinguish.
Saturday	1	6.50 P.M.	4.50 A.M.
Sunday	2	6.50	4.49
Monday	3	6.50	4.40
Tuesday	4	12.00	4.40
Wednesday	5	1.00 A.M. F.Q.	4.40
Thursday	6	1.50	4.40
Friday	7	2.30	4.40
Saturday	8	3.30	4.40
Sunday	9	3.00	4.30
Monday	10	3.50	4.30
Tuesday	11	4.10	4.30
Wednesday	12	No L.	No L.
Thursday	13	No L. F.M.	No L.
Friday	14	No L.	No L.
Saturday	15	7.10 P.M.	10.00 P.M.
Sunday	16	7.10	11.00
Monday	17	7.10	12.00
Tuesday	18	7.10	1.00 A.M.
Wednesday	19	7.10	1.50
Thursday	20	7.10	2.30
Friday	21	7.10 L.Q.	3.10
Saturday	22	7.10	3.50
Sunday	23	7.20	4.10
Monday	24	7.20	4.10
Tuesday	25	7.20	4.10
Wednesday	26	7.20	4.10
Thursday	27	7.20	4.10
Friday	28	7.20 N.M.	4.10
Saturday	29	7.20	4 10
Sunday	30	7.20	4.00



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VALVES, CONNECTIONS,
BY PRODUCT MACHINERY,
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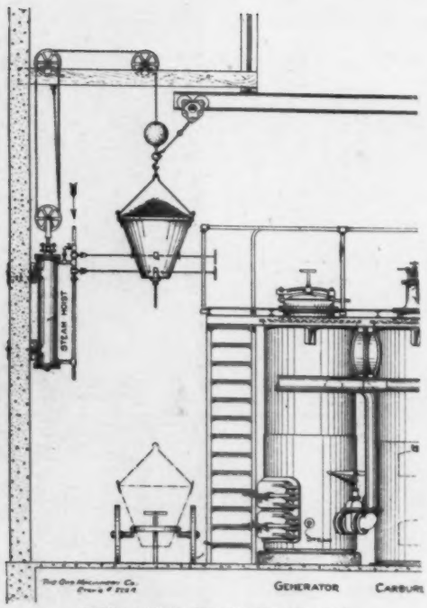

STEAM HOISTS FOR WATER GAS SETS.

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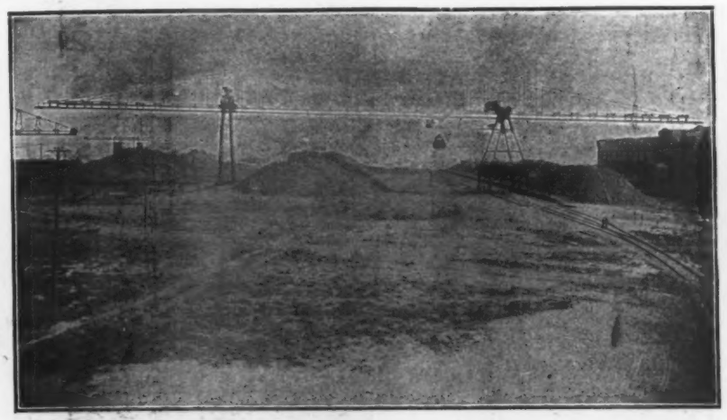

A view of one of "Brownhoist" recent installations for the rapid and economical handling of material.

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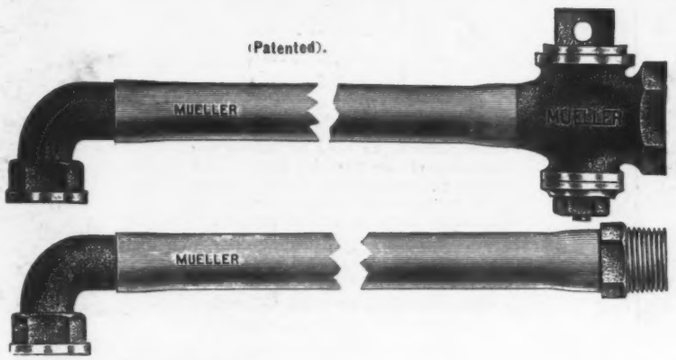

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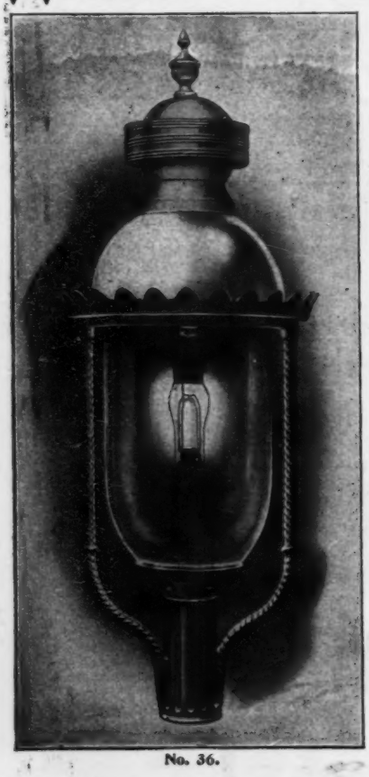

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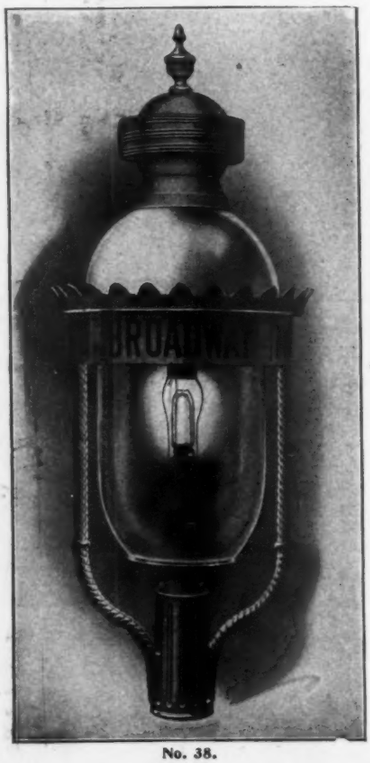

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A Cement of great value for patching retorts, putting on mouthpieces, making up all bench-work joints, lining blast furnaces and cupolas. This cement is mixed ready for use. Economic and thorough in its work. Fully warranted to stick.

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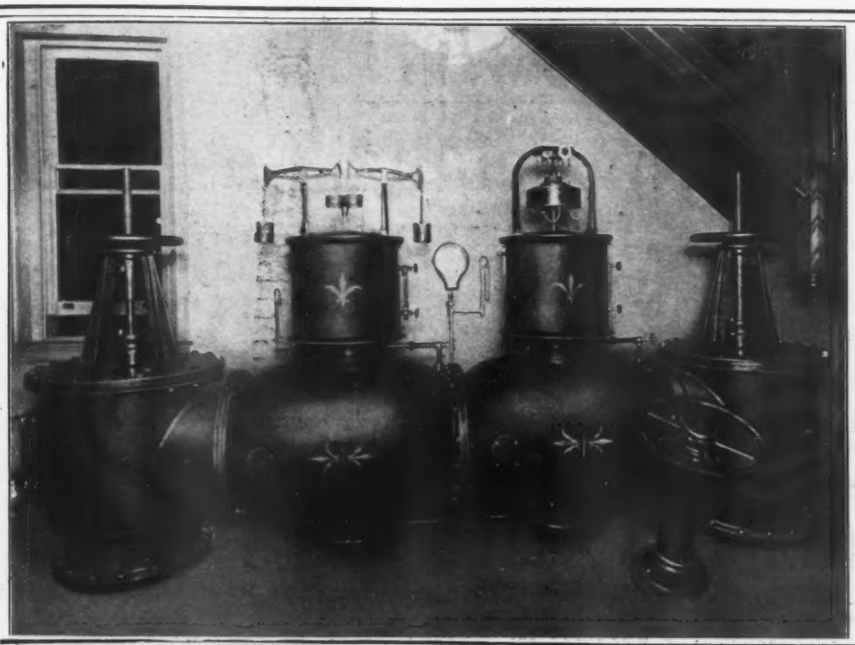

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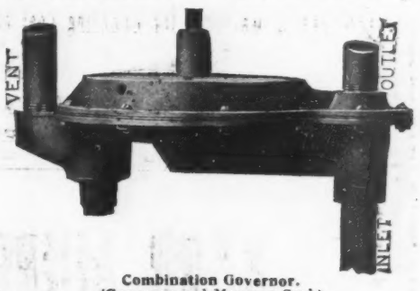

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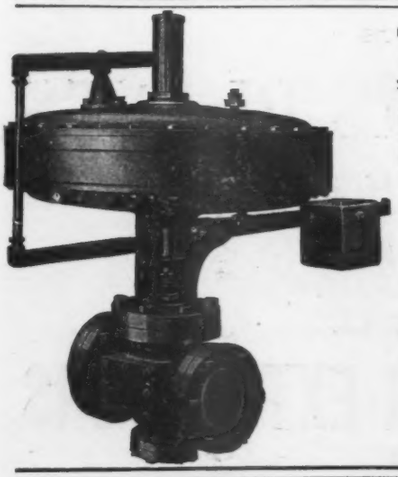

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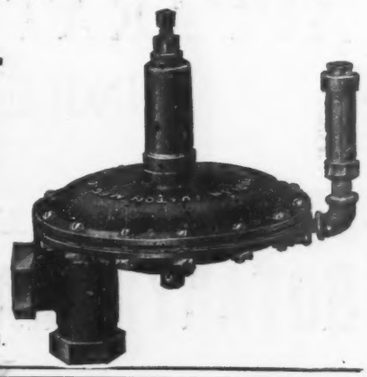

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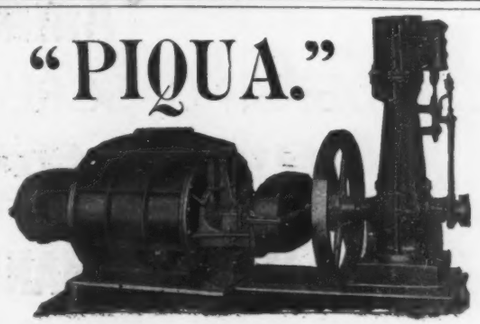

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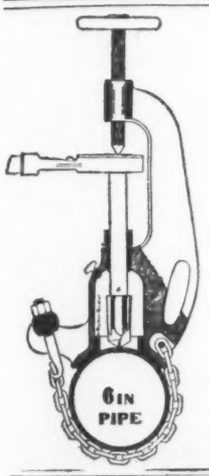

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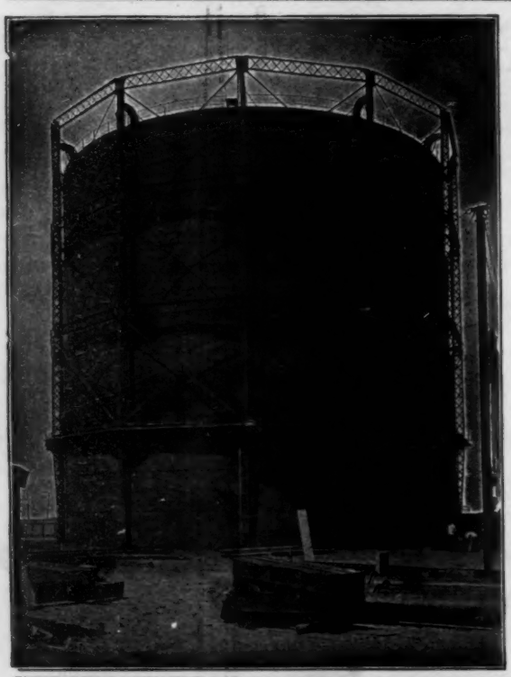

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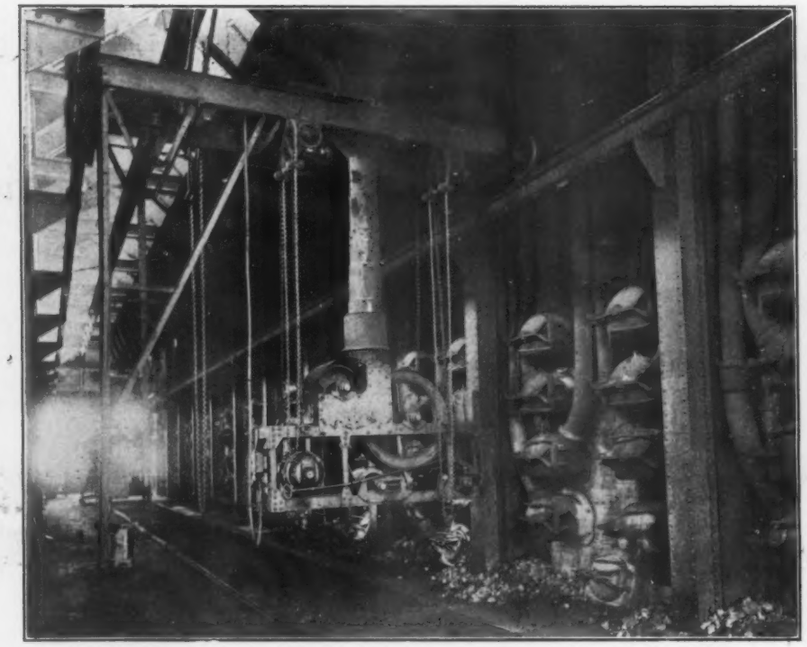

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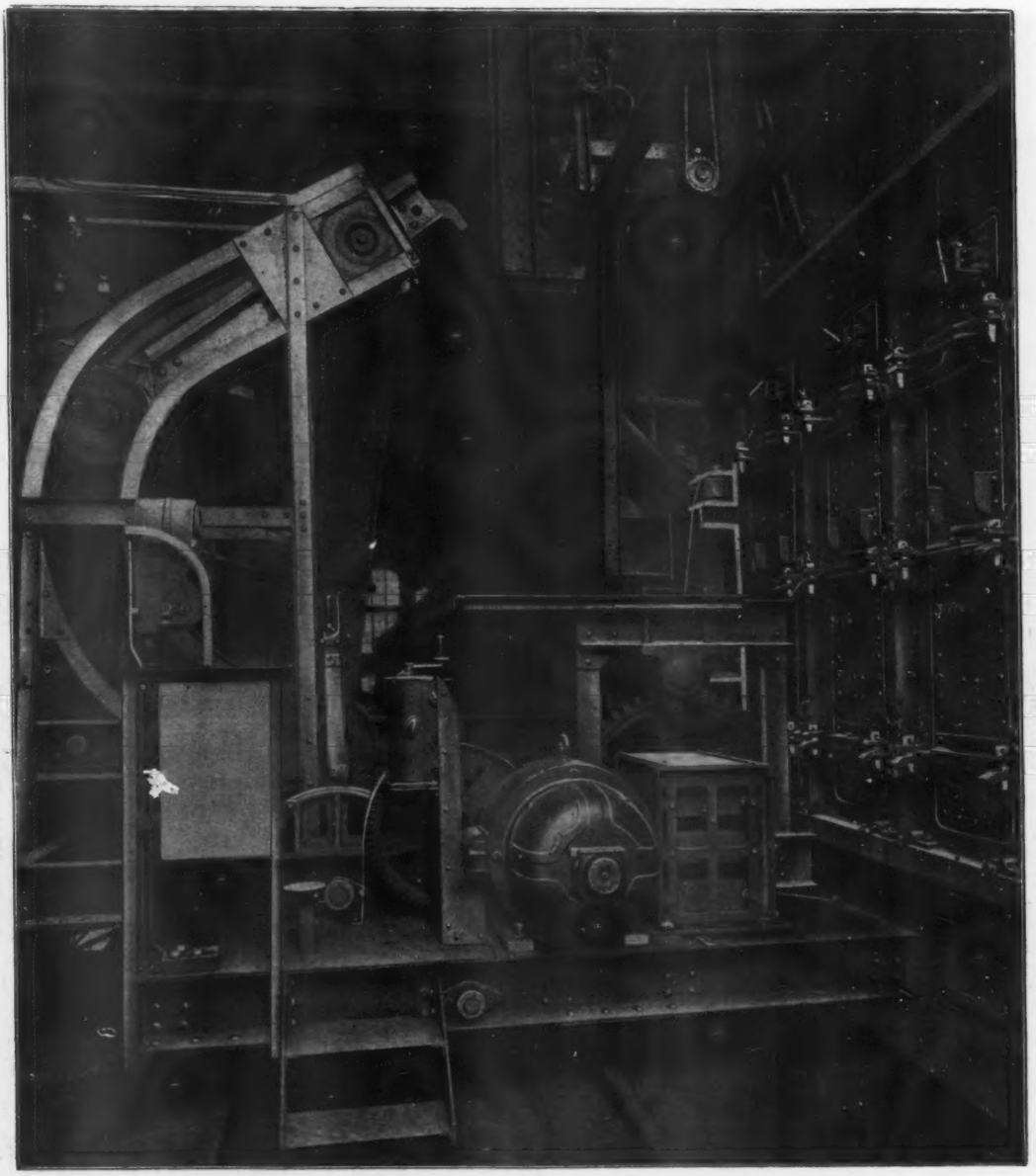

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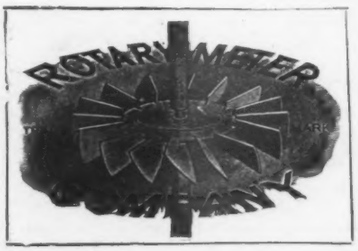

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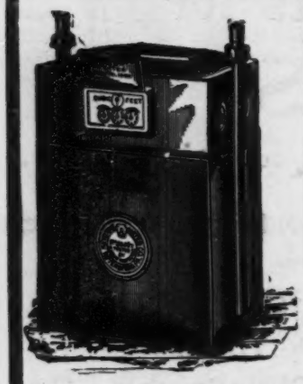

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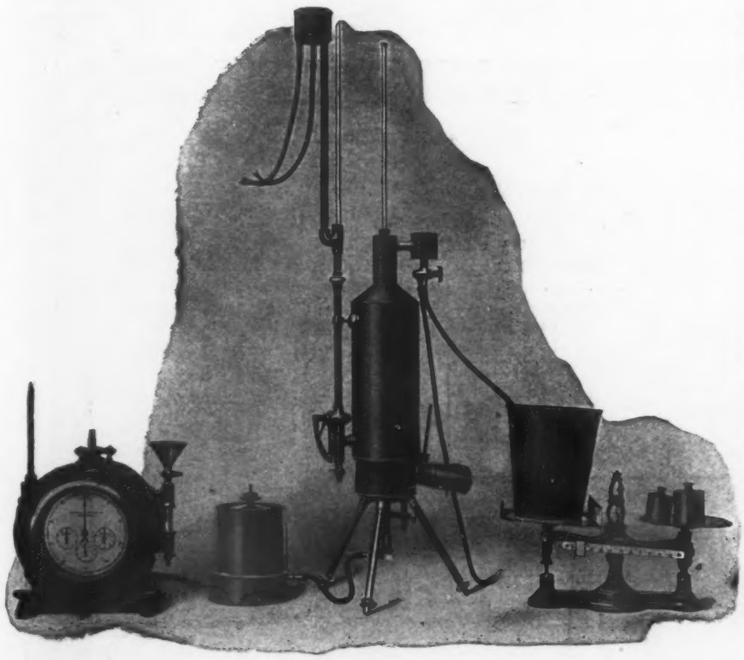

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This apparatus is of the same general design and operates on the same principle as the well-known Junkers Calorimeter, which has heretofore been regarded by gas experts as the most satisfactory form of calorimeter in use.

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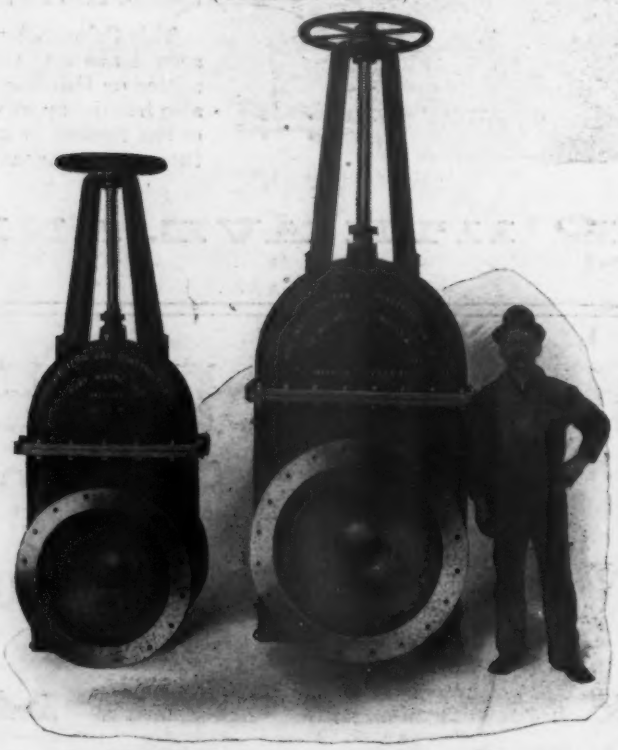
H. Koppers	. . . .	. . .	7,095	7,095
U. S. Steel Corporation . .	$19,951	353	37,917	58,221
Los Angeles Gas & Elec. Co.	. . .	1,808	7,979	9,787
Milwaukee Coke & Gas Co.	. . .	3,017	271	3,288
East St. Louis Gas Co. . .	. . . . .	. . .	2,267	2,267
				$85,489

(There are others.)



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